REPORT NO. 105-TRC-11-002 – TRC20060110
IC CORPORATION
NHTSA CC0900 - 2012 IC SCHOOL BUS

FMVSS 105
HYDRAULIC BRAKE SYSTEM COMPLIANCE TEST
2012 IC SCHOOL BUS, 4X2, 44 + 1-PASSENGER, 2-DR. BUS
(NAVISTAR CHASSIS, BASED)
NHTSA CC0900

TRANSPORTATION RESEARCH CENTER INC.
East Liberty, Ohio 43319

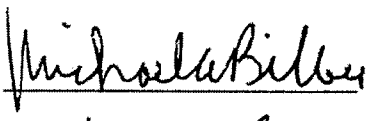
MAY 2011
FINAL REPORT

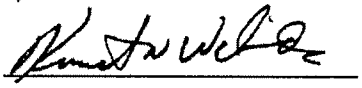
Prepared Under Contract No. DTNH22-06-C-00033

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
1200 New Jersey Avenue, S.E.
West Building, 4th Floor, OVSC (NVS-221)
Washington, D.C. 20590

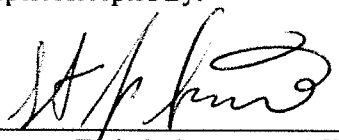
Prepared for the Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-06-C-00033.

Prepared By 

Approved By 

Date: 5/31/11

Report Accepted By:



Contract Technical Manager, Office of Vehicle Safety Compliance

6/3/11

Date

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. 105-TRC-11-002	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Final report of FMVSS 105 Compliance Testing of 2012 IC School Bus, 4X2, 44 + 1-Passneger, 2-Dr., School, NHTSA No. CC0900		5. Report Date May 2011	
		6. Performing Organization Code TRC 20060110/1001	
7. Author(s) Mike Bilbee, Project Engineer Alan Ida, Project Manager		8. Performing Organization Report No. 105-TRC-11-002	
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12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Complinace (NVS-221) 1200 New Jersey Avenue, S.E. West Wing 4th Floor Washington, D.C. 20590		13. Type of Report and Period Covered Final test report January 12, 2011 to May 26, 2011	
		14. Sponsoring Agency Code NVS-221	
15. Supplementary Notes			
16. Abstract Compliance tests were conducted on the subject 2012 IC School Bus in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-105-03 for the determination of FMVSS 105 compliance. Test failures identified were as follows: None.			
17. Key Words Compliance Testing Safety Engineering FMVSS 105		18. Distribution Statement Copies of this report are available from: NHTSA Technical Reference Division NPO-411 1200 New Jersey Avenue Washington, D.C. 20590 Email: tis@nhtsa.dot.gov Fax No.: (202) 493-2833	
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1.0 INTRODUCTION

Tests were conducted on a 2012 IC School Bus, 4X2, 44 + 1-Passenger, 2-Dr., Bus, to determine compliance with FMVSS 105 "Hydraulic Brake Systems."

All tests were conducted in accordance with the U.S. DOT, NHTSA Laboratory Procedure TP- 105-03 and/or the corresponding Transportation Research Center Inc. (TRC Inc.) test procedure, which was submitted to NHTSA for their approval. The test procedure was clearly described in the submitted document and has not been repeated in this report.

All stops were performed manually.

TRC Inc. personnel using the following TRC facilities conducted all tests:

7.5-Mile Test Track

Fade & Recovery

Skid Pad
Instrument Check
Burnish & Reburnish
Effectiveness Stops
Water Recovery
Failed Stops
Inoperative Power Assist

Brake Slope
Parking Brake

Brake Soak
Water Recovery

Average PFC during the test period was 0.98 (Skid Pad) and 0.98 (Test Track) utilizing the ASTM E1337 w/E1136 tire method.

The test vehicle met all the requirements of FMVSS 105.

2.0 FMVSS 105 VEHICLE INFORMATION SHEET Date: 1/12/11

Vehicle: Make: International NHTSA No. CC0900

Model: PB10500 GVWR: 29,800 lbs.

Model Year: 2012 Manufacture Date: 09/8/10

Body Style: 44 + 1-Pass., 4x2, 2-Dr. School Bus Wheelbase: 276.0 in.

VIN: 1DRBUSKP6CB392585

Buses Only
Chassis Mfr.: International GAWR: Front: 10,000 lbs.
Manufacture Date: 9/8/10 Rear: 21,000 lbs.
Serial (Model) No.: 392585 No. of Seats: 22 + 1

Engine Type: Diesel, V8, Direct Injection, Dual Turbocharged

Displacement: 6.4 Liters HP: NA

Engine Idle Speed: 700 RPM

Transmission Type: Automatic, RWD

No. of Axles: 2

GAWR: Front: 10,000 lbs. Rear: 21,000 lbs.

Tires: Size: 11R22S 144/142L Manufacturer: Continental

Type: HSR2, Regrooveable, Tubeless, Radial, Dual Rear Tires

Recommended Pressure at GVWR: front 105 psi rear 105 psi

Brakes: Front: ( ) Drum (X) Disc

Rear: ( ) Drum (X) Disc

Actuation: Describe Hydraulic Circuit Split: Axle by Axle

Power Unit: Hydraulic, Vacuum, etc. Hydraulic

Brake Power Assist Unit:	Yes X	No
Brake Power Unit w/Accumulator:	Yes X	No
Power Assist or Power Unit w/Backup	Yes	No X
Variable Proportioning System: (Electronic)	Yes	No X
Antiskid Device: Mfg. Meritor	Yes X	No

Parking Mechanism: (see definition)

Description: Automatic transmission with park detent.

Master Cylinder: 2.001 in.

Pedal Ratio: 5.8:1

2.0 FMVSS 105 VEHICLE INFORMATION SHEET, continued

Front Brakes:

Wheel
Brake
Components: Type: Drum ( ) Disc (X)

MATERIAL	CONSTRUCTION	MATERIAL	CONSTRUCTION
( ) Cast Iron	( ) Cast	(X) Cast Iron	(X) Integral Cast
( ) Steel	( ) Composite	( ) Steel	( ) 2-piece
( ) Bi-Metal	( ) Centrifuse	( ) Bi-Metal	(X) Vented
	( ) Pressed		( ) Unvented
( ) _____	( ) _____	( ) _____	(X) Bonded Linings

Diameter:	Inside:	N/A		Outside	15.273 in.
Thickness:	Not Applicable N/A			Include Vent	1.552 in.
Lining Code:	Primary:*	N/A		Inboard:	MA708 FF
Or Color:	Secondary:*	N/A		Outboard:	MA708 FF
Shoe Cage:	Left:	N/A	Reset To: N/A	Not Applicable	N/A
Diameter:	Right:	N/A	Reset To: N/A	Not Applicable	N/A

Dimensions:

Width:	Primary:	N/A	Inboard	2.515 in.
	Secondary:	N/A	Outboard	2.510 in.
Length:	Primary:	N/A	Inboard	8.322 in.
	Secondary:	N/A	Outboard	8.324 in.
Thickness:	Primary:	N/A	Inboard	0.730 in.
	Secondary:	N/A	Outboard	0.726 in.
Hydraulic	Wheel		Disc	
Piston Diam:	Cylinder	N/A	Caliper	2.512 in. (x4)

*May be Primary/Secondary or other: Not Applicable

Rear Brakes:

Wheel
Brake
Components: Type: Drum ( ) Disc (X)

MATERIAL	CONSTRUCTION	MATERIAL	CONSTRUCTION
( ) Cast Iron	( ) Cast	(X) Cast Iron	(X) Integral Cast
( ) Steel	( ) Composite	( ) Steel	( ) 2-piece
( ) Bi-Metal	( ) Centrifuse	( ) Bi-Metal	(X) Vented
	( ) Pressed		( ) Unvented
( ) _____	( ) Bonded Linings	( ) _____	(X) Bonded Linings

2.0 FMVSS 105 VEHICLE INFORMATION SHEET, continued

Rear Brakes:

Wheel Brake Components:	Type: Drum ( )		Disc (X)	
Diameter:	Inside: N/A		Outside	15.286 in.
Thickness:	N/A		Include Vent	1.542 in.
Lining Code	Leading*: N/A		Inboard	MA708 FF
Or Color:	Trailing*: N/A		Outboard	MA708 FF
Shoe Cage	Left N/A	Reset To N/A	Not Applicable	
Diameter:	Right N/A	Reset To N/A	Not Applicable	

Dimensions of Linings:

Width:	Primary	N/A	Inboard	2.506 in.
	Secondary	N/A	Outboard	2.510 in
Length:	Primary	N/A	Inboard	8.322 in.
	Secondary	N/A	Outboard	8.327 in.
Thickness:	Primary	N/A	Inboard	0.728 in.
	Secondary	N/A	Outboard	0.718 in.
Hydraulic Piston Diam:	Wheel Cylinder	N/A	Disc Caliper	2.511 in. (x4)

*May be Primary/Secondary or other: Not Applicable

Other Component Information:

Friction-Type Parking Brake:	( ) Hand-Operated ( ) Foot-Operated
Non-Service Brake Type: Parking Brake:	(X) Hand-Operated ( ) Foot-Operated
Will adjusters be locked out for this test series?	( ) Yes ( ) No (X) Not Appl.

Describe method used to lock out adjusters: Not Applicable

Note: If at any time the test series has begun, any brake system part requires replacement or the brake system requires adjustments other than permitted in burnish and reburnish procedures, discontinue testing and notify the COTR immediately.

Comments: None.

3.0 Data Sheet No. 1.1 Summary of Tests (Sheet 1 of 9)

Veh.: 2012 IC SB NHTSA No.: CC0900 GVWR: 29,800 lbs.

Test	Required Performance	Actual Performance*	P	F
Max. Speed in 2 miles	None	73.3 mph avg.	Not Appl.	
First Effectiveness:	30 mph: Pedal Force, 15-150 lbs. Stopping distance, 88 ft. for one stop	6 of six stops pass Best Stop: 64.5 ft., 123.8 lbs. PF (max)	X	
	60 mph: Pedal Force, 15-150 lbs. Stopping distance, 388 ft. for one stop	6 of six stops pass Best Stop: 204.9 ft., 142.6 lbs. PF (max)	X	
Second Effectiveness:	30 mph: Pedal Force, 15-150 lbs. Stopping distance, 70 ft. for one stop	6 of six stops pass Best Stop: 60.7 ft., 129.1 lbs. PF (max)	X	
	60 mph: Pedal Force, 15-150 lbs. Stopping distance, 280 ft. for one stop	6 of six stops pass Best Stop: 201.2 ft., 130.6 lbs. PF (max)	X	
	80 mph: Pedal Force, 15-150 lbs. Stopping distance, N/A ft. for one stop	N/A of four stops pass Best Stop: N/A ft., N/A lbs. PF (max)	Not Appl.	

*Stopping Distance - Visual Data
Pedal Force - Visual Data

3.0 Data Sheet No. 1.1 Summary of Tests (Sheet 2 of 9)

Veh.: 2012 IC SB NHTSA No.: CC0900 GVWR: 29,800 lbs.

Test	Required Performance	Actual Performance*		P	F
Parking Brake REGULAR	Shall hold vehicle stationary for 5 minutes in both uphill and downhill direction on a 20% grade, both at LLVW and GVWR, with no more than 125 lbs. hand lever or 150 lbs. foot pedal force.	Held stationary for 5 minutes? Yes			
			Force (lbs.)		
		GVWR-Uphill	50.6	X	
		GVWR-Downhill	47.5	X	
		LLVW-Uphill	45.1	X	
		LLVW-Downhill	38.5	X	
		(X) Foot Pedal			
		( ) Hand Lever			
Parking Brake	(1) Shall meet REGULAR PROCEDURE requirements with transmission in "Park." (2) Shall meet REGULAR PROCEDURE requirements on 20% slope with transmission in "Neutral." (3) Parking mechanism shall not disengage or suffer damage in front and rear 2 1/2 mph moving barrier impacts.	GVWR-30%-Uphill	Not Appl.		
		GVWR-30%-Downhill	" " "		
		GVWR-20%-Uphill	" " "		
		GVWR-20%-Downhill	" " "		
		LLVW-20%-Uphill	" " "		
		LLVW-20%-Downhill	" " "		
		LLVW-30%-Uphill	" " "		
		LLVW-30%-Downhill	" " "		
		MEETS MOVING BARRIER SPEC	Not Appl.		
Stability and Control	When stopped four consecutive times under conditions specified in S6, shall stop from 30 mph or 75% of drive-through speed, at least three times within the 12-ft. lane without any part of the vehicle leaving the roadway.	Number of stops within 12-ft. lane: 4.		X	

3.0 Data Sheet No. 1.1 Summary of Tests (Sheet 3 of 9)

Veh.: 2012 IC SB NHTSA No.: CC0900 GVWR: 29,800 lbs.

Test	Required Performance	Actual Performance*	P	F
Third Effectiveness LLVW	60 mph: Pedal Force, 15-150 lbs. Stopping distance, 280 ft. for one of six stops	6 of six stops pass Best Stop: 164.4 ft., 147.7 lbs. PF (max)	X	
Partial Failure LLVW	60 mph: Pedal Force, 15-150 lbs. Stopping distance, 613 ft. for one of four stops with any sub-system failed.	System #1 Inoperative: 4 of four stops pass Best Stop: 304.1 ft., 103.4 lbs. PF (max) System #2 Inoperative: 4 of four stops pass Best Stop: 308.9 ft., 102.6 lbs. PF (max)	X X	
Partial Failure GVWR	60 mph: Pedal Force, 15-150 lbs. Stopping distance, 613 ft. for one of four stops with any sub-system failed.	System #2 Inoperative: 4 of four stops pass Best Stop: 387.0 ft., 122.0 lbs. PF (max) System #1 Inoperative: 4 of four stops pass Best Stop: 424.4 ft., 125.1 lbs. PF (max)	X X	
Partial Failure Antilock and/ or Variable Proportioning Brake Systems GVWR	60 mph: Pedal Force, 15-150 lbs. Stopping distance, 613 ft. for one of four stops with any sub-system failed.	ABS Inoperative: 4 of four stops pass Best Stop: 215.3 ft., 79.9 lbs. PF (max) Variable Prop. Inoperative: _____ of four stops pass Best Stop: _____ ft., ____ lbs. PF (max)	X Not Tested	

*Stopping Distance - Visual Data
Pedal Force - Visual Data

3.0 Data Sheet No. 1.1 Summary of Tests (Sheet 4 of 9)

Veh.: 2012 IC SB NHTSA No.: CC0900 GVWR: 29,800 lbs.

Test	Required Performance	Actual Performance*	P	F
Inoperative Power Unit #1	60 mph: Pedal Force, 15-150 lbs. 613 ft. for one of four stops with power disconnected and reserve depleted.	4 of four stops pass Best Stop: Stopping distance, 482.8 ft., 123.2 lbs. PF (max)	X	

Test	Required Performance	Actual Performance*	P	F
Inoperative Power Unit #2	60 mph: Pedal Force, 15-150 lbs. 613 ft. for one of four stops with power disconnected and reserve depleted.	_____ of four stops pass Best Stop: Stopping distance, _____ ft., ___lbs. PF (max)	Not Appl.	
Inoperative Power Unit Optional (Brake Power Assist Units)	Six stops from 60 mph: at specified decels. Seventh stop at no less than seven fpsps (554 ft.).	7th Stop: _____ fpsps decel _____ lbs. PF	Not Appl.	
Inoperative Power Unit - Optional Procedure (Accumulator Systems)	Ten stops from 60 mph, at specified decelerations Eleventh stop at not less than seven fpsps (554 ft.).	11th Stop: _____ fpsps decel _____ lbs. PF	Not Appl.	
Inoperative Power Unit - Optional Procedure (Backup Systems)	15 stops from 60 mph, at average deceleration of 12 fpsps (stopping distance 293 ft.) stops with any sub-system Failed.	_____ of fifteen stops within 293 ft. Worst Stop: _____ fpsps decel _____ lbs. PF	Not Appl.	

*Stopping Distance - Visual Data
Pedal Force - Visual Data

3.0 Data Sheet No. 1.1 Summary of Tests (Sheet 5 of 9)

Veh.: 2012 IC SB NHTSA No.: CC0900 GVWR: 29,800 lbs.

Test	Required Performance	Actual Performance*	P	F
First Fade and Recovery (Baseline)	40-20 mph: Three snubs at 10 fpsps Pedal Force: 10-60 lbs.	Average Control Force (max) 52.6 lbs. PF	X	
First Fade and Recovery (Fade)	40-20 mph: Pedal Force: 15-150 lbs. (min) Snubs 1-5: 10 fpsps (min) Snubs 6-10:5-10 fpsps decel	Snubs 1-5: 8.8 fpsps decel (min) 58.2 lbs. PF (max) Snubs 6-10: 8.7 fpsps decel (min) 54.7 lbs. PF (max)	X X	
First Fade and Recovery (Recovery)	40-20 mph: Makes 5 snubs at not less than 10 fpsps (1) a maximum for the first four recovery stops of 150 pounds, and for the fifth stop, of 20 pounds more than the average control force for the baseline check (but no more than 100 lbs.; and (2) a minimum of (a) the average control force for the baseline check minus 10 lbs., or (b) the baseline check times 0.6, whichever is lower (but in no case less than 5 lbs.). Allowable range: 31.5 to 72.5 pounds	Snubs 1-4: 55.1 lbs. PF (max) 9.1 fpsps decel (min) Stop 5: 51.2 lbs. PF (max) 9.4 fpsps decel (min)	X X	

*Stopping Distance - Visual Data
Pedal Force - Visual Data

3.0 Data Sheet No. 1.1 Summary of Tests (Sheet 6 of 9)

Veh.: 2012 IC SB NHTSA No.: CC0900 GVWR: 29,800 lbs.

Test	Required Performance	Actual Performance*	P	F
Second Fade and Recovery (Baseline)	40-20 mph: Three snubs at 10 fpsps Pedal Force: 10-60 lbs.	Average Control Force (max) 54.6 lbs. PF	X	
Second Fade and Recovery (Fade)	40-20 mph: Pedal Force: 15-150 lbs. (min) Snubs 1-10: 10 fpsps decel (min) Snubs 11-20: 10 fpsps decel	Snubs 1-10: 9.1 fpsps decel (min) 65.5 lbs. PF (max) Stops 11-20: 8.4 fpsps decel (min) 52.2 lbs. PF (max)	X X	
Second Fade and Recovery (Recovery)	40-20 mph: Makes 5 stops at not less than 10 fpsps (1) a maximum for the first four recovery stops of 150 pounds, and for the fifth stop, of 20 pounds more than the average control force for the baseline check(but no more than 100 lbs.; and (2) a minimum of (a) the average control force for the baseline check minus 10 lbs., or (b) the baseline check times 0.6, whichever is lower (but in no case less than 5 lbs.). Allowable range: 32.8 to 74.6 pounds	Snubs 1-4: 60.1 lbs. PF (max) 9.3 fpsps decel (min) Snub 5: 57.8 lbs. PF (max) 10.7 fpsps decel (min)	X X	

*Stopping Distance - Visual Data
Pedal Force - Visual Data

3.0 Data Sheet No. 1.1 Summary of Tests (Sheet 7 of 9)

Veh.: 2012 IC SB NHTSA No.: CC0900 GVWR: 29,800 lbs.

Test	Required Performance	Actual Performance*	P	F
Fourth Effectiveness	30 mph: Pedal Force, 15-150 lbs. NA ft. for one of six stops	_____ of six stops pass Best Stop: _____ft., _____ lbs. PF (max)		Not Appl.
	60 mph: Pedal Force, 15-150 lbs. Stopping distance, NA ft. for one of six stops	_____ of six stops pass Best Stop: _____ft., ____ lbs. PF (max)		Not Appl.
	80 mph: Pedal Force: 15-150 lbs. Stopping distance: NA ft. for one of four stops	_____ of four stops pass Best Stop: _____ft., _____ lbs. PF (max)		Not Appl.
	100 mph: Pedal Force, 15-150 lbs. Stopping distance, NA ft. for one of four stops	_____ of four stops pass Best Stop: _____ ft., _____ lbs. PF (max)		Not Appl.

*Stopping Distance - Visual Data
Pedal Force - Visual Data

3.0 Data Sheet No. 1.1 Summary of Tests (Sheet 7 continued of 9)

Veh.: 2012 IC SB		NHTSA No.: CC0900	GVWR: 29,800 lbs.	
Water Recovery (Baseline)	30 mph: Three stops at 10 fpsps Pedal Force: 10-90 lbs.	Avg. Sustained Control Force (max) 55.5 lbs. PF	P X	F
Water Recovery (Recovery)	30 mph: Make 5 stops at not less than 10 fpsps (1) maximum for the first four recovery stops at 150 pounds, and for the fifth stop, of 60 pounds more than the average control force for the baseline check (but no more than 110 lbs.); and (2) a minimum of (a) the average control force for the baseline check minus 10 lbs. or (b) the baseline check times 0.6, whichever is lower (but in no case less than 5 lbs.).	Stops 1-4: 55.0 lbs. PF (max) 9.7 fpsps decel (min)	X	
		Stop 5: 48.9 lbs. PF (max) 10.1 fpsps decel (min)	X	
	Allowable range:	33.0 to 110.0 pounds	X	

*Stopping Distance - Visual Data
Pedal Force - Visual Data

3.0 Data Sheet No. 1.1 Summary of Tests (Sheet 8 of 9)

Veh.: 2012 IC SB NHTSA No.: CC0900 GVWR: 29,800 lbs.

Test	Required Performance	Actual Performance*	P	F
Spike Stops	30 mph: Vehicle shall be capable of making 10 spike stops.	____ stops completed Max. pedal force _____ lbs. (peak) _____ lbs. avg.	Not Appl.	
Post-Spike Effectiveness	60 mph: Pedal Force: 15-150 lbs. Stopping distance: NA ft. for one of six stops	____ of six stops pass Best Stop: _____ ft., _____ lb. PF (max.)	Not Appl.	
Moving Barrier (For vehicles tested by the Optional Brake Procedure)	Parking mechanism shall not disengage or fracture when vehicle is subjected to front and rear 2-1/2 mph moving barrier impacts.	Front Impact: Vehicle Movement? Yes ___ No ___ Rear Impact: Vehicle Movement? Yes ___ No ___	Not Tested N/A	

*Stopping Distance - Visual Data
Pedal Force - Visual Data

3.0 Data Sheet No. 1.1 Summary of Tests (Sheet 9 of 9)

Veh.: 2012 IC SB NHTSA No.: CC0900 GVWR: 29,800 lbs.

Test	Required Performance	Actual Performance*	P	F
Final Inspect:				
Lining	Firmly attached to backing.	Yes X No ___	X	___
	Areas 90% of original.	Yes X No ___	X	___
	Working surface free of lubricant or fluid.	Yes X No ___	X	___
Mechanical	Components must be intact and functional.	Yes X No ___	X	___
Hydraulic	Components must be leak-free.	Yes X No ___	X	___
	Independent reservoirs must have adequate volume.	Yes X No ___	X	___
	Total reservoir volume must be adequate.	Yes X No ___	X	___
Indicator Lamp	Lit when key is ON or in "check" position.	Lit for check of function: Yes X No ___	X	___
	Lit when following occur either (A), (C), or (D): or else (B), (C), or (D): (A) Gross pressure loss, (B) Unsafe fluid level, (C) Electrical failure, (D) Parking brake on.	Lit for (A): Yes X No ___ Lit for (B): Yes X No ___ Lit for (C): Yes X No ___ Lit for (D): Yes X No ___	X X X X	___ ___ ___ ___
	Color meets requirement	Yes X No ___	X	___
	Lettering meets requirement	Yes X No ___	X	___
(For vehicles without split service brake system)	Indicator lamp flashes and is accompanied by audible signal:	Yes ___ No ___ N/A ___	Not Appl.	

4.0 Data Sheet No. 1.2 Vehicle Weight

Veh.: 2012 IC SB NHTSA No.: CC0900 Date: 1/17/11
TIRE PRESSURE (cold): FRONT 105 psi; REAR 105 psi
ODO.: START 963 mi. ; FINISH 1932 mi.

SCALE(S) USED: TRC Toledo-Mettler Jag Platform

VEHICLE WEIGHT (9.0 - S6.1)

Schedule			Requirements		
Obtain GVWR, LLVW, and axle weights within +0, -1%			None		
GVWR 29,800 lbs. GAWR: (front vehicle certification label)	Front	10,000 lbs.	Target Weight	Front	NA lbs.
	Rear	21,000 lbs.		Rear	NA lbs.
				GVWR =	NA lbs.

UNLOADED VEHICLE WEIGHT (UVW) - Actual Weight of Test Vehicle with Maximum Capacity of Engine Fuel, Oil, and Coolant.

Left Front	3,500 lbs.	Right Front	3,700 lbs.	Total Front	7,200 lbs.	
Left Rear	5,200 lbs.	Right Rear	5,910 lbs.	Total Rear	11,110 lbs.	Veh. 18,310 lbs.

LIGHT LOADED VEHICLE WEIGHT (LLVW)

Note 1: LLVW (Target) = UVW + 500 lbs.
Note 2: Weight distributed in front passenger seat area.
Note 3: Neither axle load at LLVW less than at UVW; ballasted as required

Left Front	3,680 lbs.	Right Front	3,950 lbs.	Total Front	7,630 lbs.	
Left Rear	5,160 lbs.	Right Rear	6,040 lbs.	Total Rear	11,200 lbs.	Veh. 18,830 lbs.

ACTUAL TEST LLVW

Left Front	3,690 lbs.	Right Front	3,930 lbs.	Total Front	7,620 lbs.	
Left Rear	5,290 lbs.	Right Rear	5,920 lbs.	Total Rear	11,210 lbs.	Veh. 18,830 lbs.

Load: Driver 200 lbs. + Instrument 90 lbs. + Ballast 210 lbs. = 500 lbs.

4.0 Data Sheet No. 1.2 Vehicle Weight, continued

FULLY LOADED VEHICLE WEIGHT (GVWR)
Note 1: Vehicle loaded so axle loads proportional to GAWR shown above (target).
Note 2: But no axle weight to be less than at LLVW.

Load: Driver	200 lbs.	+ Instrument	90 lbs.	+ Ballast	11,200 lbs.	=	11,490 lbs.		
Left Front	4,720 lbs.	Right Front	4,890 lbs.	Total Front	9,610 lbs.				
Left Rear	9,810 lbs.	Right Rear	10,380 lbs.	Total Rear	20,190 lbs.	Veh.	29,800 lbs.		

COMMENTS: None.

DATA INDICATES COMPLIANCE YES ( ) NO ( ) NO REQUIREMENTS (X)
DRIVER Derek Bevis OBSERVER None
RECORDED DATA PROCESSED BY D. Bevis DATE 5/27/11
APPROVING LABORATORY OFFICIAL M. Bilbee DATE 5/27/11

Symbols for Brake Components

4	-	4 Wheel	G	-	Groan	DL	-	Deceleration (State FPSPS)
X	-	Skid	SQ	-	Squeal	PF	-	Pedal on Floor
L	-	Left	SQK	-	Squeak	SCP	-	Shoe Scrape
R	-	Right	PO	-	Pinchout	RB	-	Rubber Banding
R	-	Rear	P	-	Pull	O	-	Odor
F	-	Front	R	-	Shudder	NOX	-	No Skid
B	-	Both	M	-	Momentary			

INCIP	-	Incipient
INT or INIT	-	Initial Part of Stop
MID	-	Middle of Stop
END	-	End of Stop

EXAMPLE

"BFMID" = Both front wheel lockup occurred at approximately middle of stop

Section 5.0 – Test Data
Data Sheets 4 through 22A

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

Transportation Research Center, Inc.
10820 State Route 347
East Liberty, Ohio 43319
(937)666-2011 www.trcpg.com

Date Tested: 04/21/11

DATA SHEET 4 - SPEED VERSUS DISTANCE DETERMINATION

Testing Conditions: INV DATA, Section 0001, 04/21/11, 07:30:50

Weather Conditions: 39°F Wind: 10 mph 340° Start Odo.: 1544 End Odo.: 1552

Schedule:
GVWR, accelerate from 0 mph to maximum speed attainable in 2 miles or to 104 mph. Record times to speeds.

Performance Requirements:
Maximum Speed
First Run South

RUN #	MAX SPD (mph)	0-40 MPH TIME (second)	0-60 MPH TIME (second)	0-80 MPH TIME (second)	AVE MPH RUNS #1 & 2 (mph)
1	73.3	20.5	48.3	0.0	36.9

INSTRUMENTATION CHECK (S7.2)

Testing Conditions:
INV DATA, Section 0010, 04/06/11, 07:45:40

Schedule:
GVWR, 10 Stops, 30-0 mph, 10 fpsps
in gear, 150-200 Deg F IBT

Performance Requirements: None

STOP #	INITIAL SPD (mph)	Ave IBT Front (°F)	AVG IBT REAR (°F)	Stop Distance (feet)	AVE SUSTAINED PEDAL FORCE (lb)	AVERAGE SUSTAINED DECELERATION (ft/sec²)	MAX PEDAL FORCE (lb)
1	30.1	154.5	181.5	94.8	52.1	10.5	74.7
2	30.3	132.5	161.0	98.7	45.8	10.0	63.6
3	30.3	139.0	168.0	99.4	47.1	10.1	53.2
4	29.5	137.5	165.0	94.8	45.1	10.1	54.6
5	30.7	136.0	163.0	103.6	45.0	10.1	52.3
6	30.7	148.5	171.5	130.2	43.0	8.6	66.2
7	30.7	143.0	168.5	103.8	46.3	10.1	52.1
8	30.3	139.0	164.5	100.7	45.8	10.3	55.1
9	30.2	139.0	165.5	96.0	43.8	10.4	56.1
10	30.3	140.0	163.5	102.7	48.3	10.2	57.9

DATA INDICATES COMPLIANCE: YES ( ) NO ( ) NO REQUIREMENTS (X)

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 04/06/11

DATA SHEET 5 - FIRST EFFECTIVENESS AT GVWR (S7.3)

Testing Conditions: INV DATA, Section 0015, 04/06/11, 09:05:23

Weather Conditions: 53°F Wind: 20 mph 259° Start Odo.: 990 End Odo.: 1013

Schedule:
GVWR, 150 - 200°F Initial brake temperatures,
Initial Speeds 30 & 60 mph to zero
6 stops each speed with transmission in neutral

Performance Requirements:
One Stop with:
Stopping Distance less than **88 ft@30mph**
and less than **388 ft@60mph**
Pedal force <150 lbs.
Lock-Up of one wheel or less
Vehicle Must stay in lane of 12 ft.

STOP #	INIT SPD (mph)	AVE. FRONT IBT (°F)	AVE REAR TEMP (°F)	ACTUAL STOP DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	MAX. PEDAL FORCE (lb)	AVG. PEDAL FORCE (lb)	MAX. DECEL (ft/sec²)	AVG. DECEL (ft/sec²)
1	30.5	137.0	161.0	67.5	65.2	143.7	108.9	21.9	13.9
2	30.7	141.0	165.5	68.4	65.5	126.4	104.1	20.8	13.9
3	30.4	132.5	152.5	67.4	65.8	127.3	112.5	21.7	16.4
4	30.5	147.0	165.0	67.2	64.9	130.6	107.9	21.2	13.4
5	30.9	140.5	161.0	68.5	64.5	123.8	100.1	23.2	14.4
6	30.1	140.0	161.5	68.9	68.5	127.5	109.5	22.9	16.4
1	60.0	145.0	160.5	291.6	291.9	126.2	106.3	19.9	13.4
2	59.2	161.5	168.0	254.2	261.3	131.5	111.8	22.5	15.1
3	61.2	153.0	163.0	239.0	229.4	133.2	116.8	23.9	17.6
4	62.4	156.0	174.5	221.7	204.9	142.6	108.1	26.8	16.7
5	59.3	166.0	175.5	211.8	216.6	139.1	110.0	26.8	17.2
6	60.2	172.5	179.5	213.1	212.0	133.2	113.4	27.0	17.6

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 04/06/11

DATA SHEET 6 - BURNISH AT GVWR (S7.4)

Testing Conditions: INV DATA, Section 0002, 04/06/11, 14:58:49

Weather Conditions: 51°F Wind: 5 mph 309° Start Odo.: 1016 End Odo.: 1536

Schedule:
GVWR, 500 snubs in neutral, 40 - 20 mph, 10 fpsps decel, 1 mile interval.

Performance Requirements:
Lock-up <= 1 wheel, stay in 12 ft. lane. NOTE: Pedal Force may exceed 150 lb.

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	MAX. PEDAL FORCE (lb)	AVG. PEDAL FORCE (lb)	AVG. DECEL (ft/sec²)
1	40.4	117	110	118	122	43.9	35.7	9.3
25	40.8	442	433	394	431	46.2	41.0	9.8
50	40.2	467	467	404	449	44.0	36.2	10.2
75	39.9	435	445	411	454	43.7	36.7	10.1
100	39.7	410	416	451	483	42.5	36.4	10.1
125	39.8	418	422	420	457	40.9	35.5	10.1
150	40.6	414	426	435	476	46.2	37.1	10.3
175	40.6	365	418	409	463	55.6	46.0	10.2
200	40.6	360	410	427	486	54.1	46.6	10.7
225	40.4	396	425	442	518	52.2	42.6	10.6
250	41.1	418	448	479	532	49.2	41.4	10.4
275	39.9	385	399	422	495	49.7	38.5	10.5
300	40.8	405	425	447	543	45.9	38.4	10.5
325	40.4	395	414	440	502	40.3	36.5	9.9
350	40.2	399	410	448	511	45.9	35.9	10.2
375	40.2	407	416	459	506	39.9	33.5	9.7
400	40.4	411	427	473	514	44.0	37.7	10.4
425	40.3	379	393	450	513	43.0	37.7	9.8
450	39.9	378	390	451	484	43.1	36.6	9.8
475	40.1	395	412	459	509	46.8	37.7	10.2
500	40.1	394	412	455	500	45.9	37.5	10.4

BRAKE ADJUSTMENT

Schedule:
Adjust service brakes; record procedure and amount adjusted.

Left Front: DISC NONE
Right Front: DISC NONE
Left Rear: DISC NONE
Right Rear: DISC NONE

MANUFACTURER'S PROCEDURE: NO ADJUSTMENT REQUIRED.

DATA INDICATES COMPLIANCE: YES ( ) NO ( ) NO REQUIREMENTS (X)

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 04/21/11

DATA SHEET 7 - SECOND EFFECTIVENESS AT GVWR (S7.5)

Testing Conditions: INV DATA, Section 0030, 04/21/11, 08:06:49

Weather Conditions: 44°F Wind: 10 mph 327° Start Odo.: 1553 End Odo.: 1571

Schedule:
GVWR, 150 - 200°F Initial brake temperatures,
6 Stops in neutral, 30, 60 mph.

Performance Requirements:
One Stop with:
Stopping Distance less than 70 ft@30mph, 280 ft@60mph,and *E7@80mph
Pedal force <150 lbs.
Lock-Up of one wheel or less
Vehicle Must stay in lane of 12 ft.

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	ACTUAL DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	MAX. PEDAL FORCE (lb)	AVG. PEDAL FORCE (lb)	MAX. DECEL (ft/sec²)	AVG. DECEL (ft/sec²)
1	30.9	137	144	173	186	66.3	62.6	125.5	106.5	21.7	14.0
2	30.5	158	164	184	193	67.8	65.5	126.7	101.4	21.6	14.0
3	30.9	164	167	189	188	65.1	61.2	143.3	120.7	22.2	17.5
4	31.1	176	180	192	186	65.1	60.7	129.1	106.7	23.0	15.2
5	30.5	183	187	192	184	65.2	63.2	135.2	102.0	21.9	13.4
6	30.4	185	188	188	180	66.1	64.5	135.3	113.7	22.1	14.7
1	60.9	155	177	180	187	245.1	237.9	135.3	115.3	23.3	16.1
2	60.6	169	183	184	183	221.5	217.3	135.1	111.0	25.9	16.0
3	60.1	163	183	184	182	208.7	207.9	130.7	119.3	28.1	20.0
4	60.8	162	181	185	178	206.5	201.2	130.6	112.9	28.6	20.3
5	60.3	169	188	185	182	213.0	210.8	125.6	104.9	28.0	18.1
6	60.2	171	190	184	177	211.6	209.9	138.8	102.5	30.3	16.2

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)		
1	- NOX	SOUTH	YES
2	- NOX	SOUTH	YES
3	- NOX	SOUTH	YES
4	- NOX	SOUTH	YES
5	- NOX	SOUTH	YES
6	- NOX	SOUTH	YES
1	- NOX	SOUTH	YES
2	- NOX	SOUTH	YES
3	- NOX	SOUTH	YES
4	- NOX	SOUTH	YES
5	- NOX	SOUTH	YES
6	- NOX	SOUTH	YES

COMMENTS: NONE

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 04/21/11

DATA SHEET 8 - FIRST REBURNISH AT GVWR (S7.6)

Testing Conditions: INV DATA, Section 0020, 04/21/11, 10:25:42

Weather Conditions: 46°F Wind: 7 mph 360°

Start Odo.: 1574 End Odo.: 1609

Schedule:
GVWR, 35 snubs in neutral, 40 - 20 mph, 10 fpsps decel, 1 mile interval.

Performance Requirements:
Lock-up <= 1 wheel, stay in 12 ft. lane. NOTE: Pedal Force may exceed 150 lb.

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	MAX. PEDAL FORCE (lb)	AVG. PEDAL FORCE (lb)	AVG. DECEL (ft/sec²)
1	40.9	189	223	221	223	67.3	46.8	13.7
10	40.8	405	427	412	423	51.3	45.4	9.6
20	40.7	441	469	501	495	50.9	41.7	9.5
30	40.8	446	476	515	532	52.7	44.2	9.9
35	40.5	447	478	518	526	53.7	42.2	9.9

BRAKE ADJUSTMENT

Schedule:
Adjust service brakes; record procedure and amount adjusted.

Left Front: DISC NONE
Right Front: DISC NONE
Left Rear: DISC NONE
Right Rear: DISC NONE

MANUFACTURER'S PROCEDURE: NO ADJUSTMENTS REQUIRED.

COMMENTS: NONE.

DATA INDICATES COMPLIANCE: YES ( ) NO ( ) NO REQUIREMENTS (X)

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 04/21/11

DATA SHEET 9 - PARKING BRAKE AT GVWR & LLVW (S7.7.1)

Testing Conditions: INV DATA, Section 0090, 04/22/11, 09:22:08
Testing Conditions: INV DATA, Section 0085, 04/21/11, 12:29:02
Parking Mechanism: AUTOMATIC TR Service type: N/A
Non-service type: HAND OPERATED
Weather Conditions: 43°F Wind: 10 mph 101° Start Odo.: 1611 End Odo.: 1615

Test Weight:

Schedule:
GVWR & LLVW, IBT <=150°F, neutral, 20% grade, vehicle held on grade with service brake pedal force <=150 lb., then parking brake applied and service brake released.
2 reapplications of force to service brake and parking brake allowed.

Performance Requirements:
Hold vehicle stationary for 5 minutes, GVWR & LLVW, uphill and downhill, park brake pedal force <=150 lb. foot lever, <=125 lb. hand lever.

NOTE: For vehicles with parking brake systems not utilizing the service brake friction elements, the friction elements of such systems are to be burnished prior to parking brake tests according to the manufacturer's published recommendation as furnished to the purchaser. If no recommendations are furnished, test the system in an unburnished condition. If recommendations are furnished, record method used.

GVWR APPLY #	MAX SERVICE FORCE (lb)	MIN P-FORCE TO HOLD (lb)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	AVG REAR IBT (°F)	DRIVER VEHICLE STOP COMMENTS (No. Reapplications, Direction of Stop (Up/Down) - Brake holds/fails)			
1	50.6	0.4	103	143	123.0	- 0 REAPPLY	UPHILL	HOLDS	20%
2	47.5	0.7	108	139	123.5	- 0 REAPPLY	DOWNHILL	HOLDS	20%

LLVW APPLY #	MAX SERVICE FORCE (lb)	MIN P-FORCE TO HOLD (lb)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	AVG REAR IBT (°F)	DRIVER VEHICLE STOP COMMENTS (No. of Reapplications Direction of Stop (Up/Down) - Brake holds/fails)			
1	45.1	0.4	93	98	95.5	- 0 REAPPLY	UPHILL	HOLDS	20%
2	38.5	1.7	99	100	99.5	- 0 REAPPLY	DOWNHILL	HOLDS	20%

Is brake system indicator lamp activated: YES (X) NO ( )

MFR.'S BURNISH PROCEDURE FOR NON-SERVICE ELEMENTS: N/A

COMMENTS: OPTIONAL PROCEDURE (DATA SHEET 10) NOT PERFORMED.
PARKING BRAKE AFFIXED TO DRIVESHAFT.

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 04/26/11

DATA SHEET 11A - STABILITY AND CONTROL AT LLVW (S7.5(a))

Testing Conditions: INV DATA, Section 0200, 04/26/11, 10:18:12

Weather Conditions: 68°F Wind: 19 mph 223° Start Odo.: 1622 End Odo.: 1627

Schedule:
Initial Brake Temperature <200 F
Initial Speed <=40 mph LLVW
4 stops with transmission in neutral

Performance Requirements:
Three Stops with:
Highest possible constant speed at which vehicle can be driven through 200 feet of arc of low Mu 500 ft radius curve.
Vehicle Must stay in lane of 12 feet

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	ACTUAL DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	MAX. PEDAL FORCE (lb)	AVG. PEDAL FORCE (lb)	MAX. DECEL (ft/sec²)	AVG. DECEL (ft/sec²)
1	20.98	149	167	159	182	118.0	241.1	118.91	101.15	20.32	4.87
2	21.51	158	169	164	190	119.0	231.3	125.33	99.45	19.19	4.73
3	20.64	158	169	162	195	84.1	177.8	143.25	112.70	21.65	5.57
4	19.96	157	170	164	197	78.8	178.0	143.67	115.30	22.30	6.44

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)		
1	- NOX	EAST	YES
2	- NOX	EAST	YES
3	- NOX	EAST	YES
4	- NOX	EAST	YES

Corrected Distances are used to determine shortest stopping distance.

Maximum Drive Thru Speed: 27.0 Mph

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 04/29/11

DATA SHEET 11 - Third Effectiveness (S7.8)

Testing Conditions: INV DATA, Section 0035, 04/29/11, 10:31:49

Weather Conditions: 51°F Wind: 8 mph 324° Start Odo.: 1633 End Odo.: 1645

Schedule:
LLVW, 6 stops in neutral, 60-0 mph,
150 - 200°F IBT.

Performance Requirements:
One Stop with:
Stopping Distance less than 280 ft@60mph
Pedal force <150 lbs.
Lock-Up of one wheel or less
Vehicle Must stay in lane of 12 ft.

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	ACTUAL STOPPING DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	MAX. PEDAL FORCE (lb)	AVG. PEDAL FORCE (lb)	AVG. DECEL (ft/sec²)	MAX. DECEL (ft/sec²)
1	59.7	123	147	150	196	197.8	199.5	126.2	98.5	20.0	30.6
2	60.0	155	169	167	180	188.5	188.7	129.5	102.1	20.7	31.8
3	60.6	167	182	170	189	183.5	180.0	137.1	100.5	17.9	33.5
4	59.9	160	166	172	193	189.9	190.3	132.5	104.5	18.7	35.6
5	60.1	163	172	162	186	171.9	171.1	133.1	99.6	19.3	36.9
6	60.1	168	182	157	185	165.0	164.4	147.7	112.4	21.5	37.3

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

COMMENTS: NONE

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 05/05/11

DATA SHEET 12 - Partial Failure LLVW (S7.9)

Testing Conditions: INV DATA, Section 0050, 05/05/11, 07:47:12
Testing Conditions: INV DATA, Section 0055, 05/05/11, 11:13:45

Weather Conditions: 57°F Wind: 13 mph 192° Start Odo.: 1649 End Odo.: 1679

Schedule:
LLVW, 4 stops in gear with each subsystem inoperative, 60-0 mph, 150-200° IBT.
Non-split system vehicle: 10 stops.

Performance Requirements:
One stop, 60 mph, 613 ft., pedal force <150 lbs., lockup allowed, stay in 12 ft. lane.
Warning light on at 50 lbs. pedal force manual, 25 lbs. power, or 225 psi.

System #1 Inoperative

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	ACTUAL STOP DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	AVG. PEDAL FORCE (lb)	MAX. DECEL (ft/sec²)	MAX PEDAL FORCE (lb)	AVG DECEL (ft/sec²)
1	60.2	183	185	69	69	321.2	319.0	106.5	22.7	119.3	12.5
2	60.4	179	193	84	87	323.0	319.2	107.1	23.2	120.7	12.2
3	60.4	179	193	89	95	333.4	329.1	108.9	22.3	128.5	12.0
4	60.6	164	191	102	115	310.2	304.1	103.4	23.9	116.1	12.6

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)		
1	NOX	SOUTH	YES
2	NOX	SOUTH	YES
3	NOX	SOUTH	YES
4	NOX	SOUTH	YES

System #2 Inoperative

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	ACTUAL STOP DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	AVG. PEDAL FORCE (lb)	MAX. DECEL (ft/sec²)	MAX PEDAL FORCE (lb)	AVG DECEL (ft/sec²)
1	60.4	84	94	177	197	333.0	328.9	102.7	19.4	119.4	12.3
2	60.0	86	98	160	189	316.4	316.3	105.6	22.0	121.5	13.2
3	60.1	84	99	152	194	309.8	308.9	102.6	22.9	122.7	13.5
4	59.9	84	98	158	193	310.8	312.1	106.0	20.6	128.1	13.0

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)		
1	NOX	SOUTH	YES
2	NOX	SOUTH	YES
3	NOX	SOUTH	YES
4	NOX	SOUTH	YES

COMMENTS:
System #1: Warning light on at N/A lb.,M/C FWRD PRT DISCONNECTED LR&RR INOP
System #2: Warning light on at N/A lb.,M/C RWRD PRT DISCONNECTED,LF&RF INOP
FLUID LEVEL SENSOR? YES (X) NO ( ) LAMP ON? YES (X) NO ( )
DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 05/06/11

DATA SHEET 13 - Partial Failure GVWR (S7.9.3)

Testing Conditions: INV DATA, Section 0060, 05/06/11, 07:28:04
Testing Conditions: INV DATA, Section 0065, 05/06/11, 12:19:59

Weather Conditions: 57°F Wind: 10 mph 247° Start Odo.: 1688 End Odo.: 1726

Schedule:
GVWR, 4 stops in gear with each subsystem inoperative, 60-0 mph, 150-200° IBT.

Performance Requirements:
One stop, 60 mph, 613 ft., pedal force <150 lbs., lockup allowed, stay in 12 ft. lane.

System #2 Inoperative

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	ACTUAL STOP DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	AVG. PEDAL FORCE (lb)	MAX. DECEL (ft/sec²)	MAX PEDAL FORCE (lb)	AVG DECEL (ft/sec²)
1	60.1	75	91	164	188	448.0	446.1	116.8	15.0	131.3	9.1
2	60.2	72	83	156	186	394.4	392.4	116.7	16.2	130.7	10.3
3	59.9	81	97	176	189	386.3	387.0	122.0	17.2	142.3	10.5
4	60.7	80	102	185	193	412.4	403.0	122.0	15.6	132.3	10.1

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)		
1	- NOX	SOUTH	YES
2	- NOX	SOUTH	YES
3	- NOX	SOUTH	YES
4	- NOX	SOUTH	YES

System #1 Inoperative

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	ACTUAL STOP DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	AVG. PEDAL FORCE (lb)	MAX. DECEL (ft/sec²)	MAX PEDAL FORCE (lb)	AVG DECEL (ft/sec²)
1	60.1	146	177	122	113	452.5	450.9	119.4	17.6	135.5	9.3
2	60.5	164	184	105	100	431.9	424.4	125.1	21.3	137.9	9.6
3	60.3	168	190	99	97	434.5	430.0	117.6	17.3	139.3	9.7
4	61.4	174	192	100	96	446.8	426.6	122.5	17.3	134.2	9.6

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)		
1	- NOX	SOUTH	YES
2	- NOX	SOUTH	YES
3	- NOX	SOUTH	YES
4	- NOX	SOUTH	YES

COMMENTS:

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 05/09/11

DATA SHEET 14-ANTILOCK OR VARIABLE PROPORTIONING BRAKE SYSTEM (S7.9.4)

Testing Conditions: INV DATA, Section 0040, 05/09/11, 08:56:45

Weather Conditions: 60°F Wind: 8 mph 120° Start Odo.: 1733 End Odo.: 1746

Schedule:
GVWR, 4 stops in gear,60-0 MPH,
antilock or variable prop failed, 150-200°F IBT

Performance Requirements:
One stop, 60 mph, 613 ft.,pedal force <150 lbs.,
lockup allowed, stay in 12 ft. lane.

ABS FAILURE

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	ACTUAL DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	AVG. PEDAL FORCE (lb)	MAX PEDAL FORCE (lb)	AVG DECEL (ft/sec²)	MAX. DECEL (ft/sec²)
1	60.4	156	170	194	189	313.4	308.8	61.6	70.5	14.2	20.0
2	60.1	147	167	188	177	215.7	215.3	79.9	108.9	18.4	30.2
3	59.9	156	179	189	174	225.4	226.3	73.1	89.2	18.9	28.0
4	60.7	158	179	191	175	233.4	227.7	69.3	82.9	18.5	26.4

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES

COMMENTS: Failed ABS by removing ABS fuse from outside fusebox panel.

IS ABS/VARIABLE PROP WARNING LAMP ACTIVATED? YES (X) NO ( )

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 05/13/11

DATASHEET 15-REGULAR PROCEDURE FOR FAILED BOOSTER OR PWR ASSIST(S7.10)

Testing Conditions: INV DATA, Section 0080, 05/13/11, 07:37:00

Weather Conditions: 72°F Wind: 12 mph 200° Start Odo.: 1751 End Odo.: 1768

Schedule:
GVWR, 4 stops in gear,60-0 MPH,
antilock or variable prop failed, 150-200°F IBT

Performance Requirements:
One stop, 60 mph, 613 ft.,pedal force <150 lbs.,
lockup allowed, stay in 12 ft. lane.

System #1 Inoperative

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	ACTUAL DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	MAX PEDAL FORCE (lb)	AVG. PEDAL FORCE (lb)	MAX. DECEL (ft/sec²)	AVE DECEL (ft/sec²)
1	60.3	157	177	95	98	518.9	513.7	99.3	71.7	15.3	8.2
2	60.3	184	176	95	98	538.6	533.2	89.7	69.7	13.9	8.0
3	61.4	186	189	106	105	513.8	490.0	114.2	79.9	14.4	8.8
4	60.3	184	188	104	106	487.9	482.8	123.2	88.4	16.0	9.0

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	RFLOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES

COMMENTS: Failed by removing 2 hyd. booster fuses from the fusebox under the hood and applied service brake pedal 30 times to deplete accumulator. Unit is fitted with Meritor Wabco Hydraulic Booster with Accumulator.

DATA SHEET 16, OPTIONAL PROCEDURE, NOT PERFORMED.

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 05/13/11

DATA SHEET 17 - FIRST FADE AND RECOVERY (BASELINE) (S7.11)

Testing Conditions: INV DATA, Section 0100, 05/13/11, 09:28:36

Schedule:
GVWR, 3 snubs in neutral, 40 - 20 MPH,
150-200°F IBT, 10 fpsps decel

Performance Requirements:
Pedal Force 10-60 lb., lockup
=< 1 wheel, stay in 12 ft. lane.

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	MAX PEDAL FORCE (lb)	AVG. PEDAL FORCE (lb)	MAX. DECEL (ft/sec²)	AVE DECEL (ft/sec²)	AVG MAX PEDAL FORCE (lb)
1	40.3	180	188	105	108	59.9	42.5	17.0	9.4	52.6
2	40.8	185	188	129	139	48.6	42.3	16.6	10.4	
3	40.5	189	193	154	163	49.1	42.9	15.0	9.4	

COMMENTS: NONE.

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 05/19/11

DATA SHEET 17A - FIRST FADE AND RECOVERY (FADE) (S7.11)

Testing Conditions: INV DATA, Section 0101, 05/19/11, 07:52:13

Schedule:
GVWR, 10 snubs in neutral, 40 - 20 MPH, 130-150°F IBT, 10 fpsps decel, 30 second interval.

Performance Requirements:
5 snubs at 10 fpsps, 5 snubs at 10 fpsps, pedal force < 150 lbs.; Terminate reading at 5 mph.

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	MAX PEDAL FORCE (lb)	AVG. PEDAL FORCE (lb)	MAX. DECEL (ft/sec²)	AVG SUSTAINED DECEL (ft/sec²)	APPLICATION TIME (second)	TOTAL ELAPSED TIME (minute)
1	39.5	104	120	137	140	72.7	52.4	17.1	9.6	0.55	4.58
2	39.1	167	202	200	201	61.2	51.6	14.8	9.4	0.45	
3	41.6	237	271	266	266	58.2	47.6	18.4	8.8	0.43	
4	40.6	305	333	329	328	57.8	47.0	14.3	9.0	0.75	
5	41.6	351	384	381	399	55.0	46.6	14.7	9.4	0.49	
6	40.5	403	430	430	466	63.0	48.1	15.4	8.8	0.89	
7	40.5	452	478	480	510	61.0	46.3	14.9	9.2	0.87	
8	40.5	501	524	526	556	59.6	48.1	14.8	9.1	0.70	
9	40.1	540	564	569	598	54.7	45.2	14.4	8.7	1.05	
10	40.1	577	601	608	639	50.4	43.8	15.5	9.3	0.67	

COMMENTS: NONE

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 05/19/11

DATA SHEET 17B - FIRST FADE AND RECOVERY (RECOVERY)(S7.11)

Testing Conditions: INV DATA, Section 0102, 05/19/11, 07:59:21

Weather Conditions: 55°F Wind: 9 mph 182° Start Odo.: 1789 End Odo.: 1797

Schedule:
GVWR, 5 snubs in neutral, 40 - 20 MPH, 10 fpsps decel. 1.5 mile interval.

Performance Requirements:
5 snubs at 10 fpsps, snubs 1-4 pedal force < 150 lbs., snub 5 pedal force +20 lb. to lesser of -10 or .6 times the average baseline pedal force. Pedal force range: Max. 72.5 lb. Min 31.5 lb.

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	MAX PEDAL FORCE (lb)	AVG. PEDAL FORCE (lb)	AVE DECEL (ft/sec²)
1	41.3	486	546	551	565	50.4	41.2	9.1
2	40.7	444	524	524	553	53.1	41.2	9.4
3	41.1	411	477	503	520	53.1	45.0	9.7
4	41.3	389	484	484	482	55.1	42.7	10.6
5	40.0	365	429	470	489	51.2	43.5	9.4

COMMENTS: NONE

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 05/20/11

DATA SHEET 18 - SECOND REBURNISH AT GVWR (S7.12)

Testing Conditions: INV DATA, Section 0025, 05/20/11, 07:22:44

Weather Conditions: 63°F Wind: 3 mph 324°

Start Odo.: 1817 End Odo.: 1854

Schedule:
GVWR, 35 snubs in neutral, 40 - 20 mph, 10 fpsps decel, 230 - 270°F IBT or 1 mile interval.

Performance Requirements:
Lock-up <= 1 wheel, stay in 12 ft. lane. NOTE: Pedal Force may exceed 150 lb.

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	MAX. PEDAL FORCE (lb)	AVG. PEDAL FORCE (lb)	AVG. DECEL (ft/sec²)
1	40.7	138	153	174	190	62.0	51.3	10.2
10	40.4	365	419	415	439	51.4	45.7	10.2
20	40.8	435	486	486	546	51.3	44.6	10.2
30	40.5	448	497	514	595	59.5	46.5	10.3
35	40.3	449	487	524	584	53.3	43.9	10.8

BRAKE ADJUSTMENT

Schedule:
Adjust service brakes; record procedure and amount adjusted.

Left Front: DISC NONE
Right Front: DISC NONE
Left Rear: DISC NONE
Right Rear: DISC NONE

MANUFACTURER'S PROCEDURE: ADJUSTMENT NOT REQUIRED.

COMMENTS: NONE

DATA INDICATES COMPLIANCE: YES (X) NO ( ) NO REQUIREMENTS (X)

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 05/20/11

DATA SHEET 19 - SECOND FADE AND RECOVERY (BASELINE)(S7.13)

Testing Conditions: INV DATA, Section 0105, 05/20/11, 09:12:47

Schedule:
GVWR, 3 stops in gear,30-0 MPH,150-200°
IBT,10 fpsps decel.

Performance Requirements:
Pedal force 10-60 lb.,lockup
<= 1 wheel, stay in 12 ft. lane.

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	MAX PEDAL FORCE (lb)	AVG. PEDAL FORCE (lb)	AVE DECEL (ft/sec²)	MAX DECEL (ft/sec²)	AVG OF MAX PEDAL FORCE (lb)
1	40.2	141	161	177	188	54.2	45.2	10.5	15.4	54.6
2	40.1	127	158	164	198	60.0	46.9	10.4	15.8	
3	40.1	143	164	173	186	49.7	41.3	9.7	13.9	

COMMENTS: NONE

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 05/20/11

DATA SHEET 19A - SECOND FADE AND RECOVERY (FADE)(S7.13)

Testing Conditions: INV DATA, Section 0106, 05/20/11, 10:22:33

Schedule:
GVWR, 20 snubs in neutral, 40 - 20 MPH,
150-200°F IBT, 10 fpsps decel,
30 second interval.

Performance Requirements:
20 snubs at 10 fpsps,
pedal force <= 150lb;
terminate reading at 5 mph.

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	MAX PEDAL FORCE (lb)	AVG. PEDAL FORCE (lb)	AVG SUSTAINED DECEL (ft/sec²)	MAX DECEL (ft/sec²)	APPLICATION TIME (second)	TOTAL ELAPSED TEST TIME (minute)
1	41.0	119	131	136	148	48.5	41.7	9.1	15.3	0.52	9.59
2	39.4	176	191	190	202	49.7	43.2	9.9	17.0	0.40	
3	39.6	236	252	246	264	65.5	47.1	11.6	18.3	0.34	
4	40.0	302	311	302	323	55.1	44.0	10.4	15.8	0.37	
5	40.2	362	359	355	375	49.4	43.6	9.7	16.7	0.38	
6	40.2	417	411	413	433	52.5	43.0	9.7	15.2	0.46	
7	40.1	465	461	458	493	53.5	44.8	9.8	14.8	0.48	
8	40.0	512	503	500	540	54.0	44.1	10.3	14.8	0.50	
9	40.6	553	542	537	581	51.4	41.0	9.5	15.0	0.54	
10	39.8	592	580	575	622	47.6	40.8	9.7	14.0	0.45	
11	40.4	631	616	610	663	49.0	43.1	9.7	15.3	0.48	
12	39.3	667	651	647	700	46.4	40.8	9.4	13.3	0.38	
13	40.1	698	686	682	732	46.7	37.3	9.5	17.2	0.38	
14	40.4	727	720	718	761	47.3	40.1	9.8	17.5	0.44	
15	40.6	752	749	749	783	45.1	38.8	8.6	13.0	0.46	
16	40.1	776	773	781	807	49.3	42.7	9.3	14.7	0.41	
17	41.6	795	799	809	829	48.4	41.2	9.2	14.7	0.41	
18	40.6	811	820	831	846	43.6	37.5	8.4	18.7	0.42	
19	40.3	826	841	851	864	49.2	40.5	8.5	15.3	0.65	
20	40.8	841	863	870	884	52.2	44.7	9.7	15.0	0.48	

Comments: NONE

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 05/20/11

DATA SHEET 19B - SECOND FADE AND RECOVERY (RECOVERY) (S7.13)

Testing Conditions: INV DATA, Section 0107, 05/20/11, 10:34:33

Weather Conditions: 68°F Wind: 7 mph 286° Start Odo.: 1872 End Odo.: 1880

Schedule:
GVWR, 5 stops in gear, 30-0 MPH,
10 fpsps decel. Pedal Force 10-60 lb.,
1 mile interval.

Performance Requirements:
5 stops at 10 fpsps, stops 1-4 pedal force
<= 150lb; stop 5 pedal force +20
lb. to lesser of -10 or .6 X the
average baseline pedal force. Pedal force
range: Max. 74.6 lb. Min 32.8 lb.

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	MAX PEDAL FORCE (lb)	AVG. PEDAL FORCE (lb)	AVE DECEL (ft/sec²)
1	40.4	708	764	776	775	60.1	47.6	9.9
2	40.2	611	651	700	689	54.1	46.1	10.5
3	40.6	551	598	643	638	50.4	44.3	9.6
4	41.0	508	559	602	604	49.0	41.3	9.3
5	41.5	466	522	561	557	57.8	45.9	10.7

Comment: NONE

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

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Date Tested: 05/20/11

DATA SHEET 20 - THIRD REBURNISH AT GVWR (S7.14)

Testing Conditions: INV DATA, Section 0110, 05/20/11, 11:56:16

Weather Conditions: 72°F Wind: 5 mph 343°

Start Odo.: 1881 End Odo.: 1916

Schedule:
GVWR, 35 snubs in neutral, 40 - 20 mph, 10 fpsps decel, 1 mile interval

Performance Requirements:
Lock-up <= 1 wheel, stay in 12 ft. lane. NOTE: Pedal Force may exceed 150 lb.

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	AVG. PEDAL FORCE (lb)	AVG. DECEL (ft/sec²)
1	40.8	145	162	158	185	40.0	8.9
10	40.9	373	424	406	440	42.0	10.2
20	40.6	441	503	500	563	43.2	10.2
30	39.9	438	503	498	554	46.4	10.3
35	40.2	437	490	497	581	45.3	10.8

BRAKE ADJUSTMENT

Schedule:
Adjust service brakes; record procedure and amount adjusted.

Left Front:	DISC	NONE
Right Front:	DISC	NONE
Left Rear:	DISC	NONE
Right Rear:	DISC	NONE

MANUFACTURER'S PROCEDURE: NO ADJUSTMENT REQUIRED.

COMMENTS: NONE

DATA INDICATES COMPLIANCE: YES ( ) NO ( ) NO REQUIREMENTS (X)

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

Transportation Research Center, Inc.
10820 State Route 347
East Liberty, Ohio 43319
(937)666-2011 www.trcpg.com

Date Tested: 05/20/11

DATA SHEET 22 - WATER RECOVERY (BASELINE)(S7.16)

Testing Conditions: INV DATA, Section 0125, 05/20/11, 13:39:03

Schedule:
GVWR, 3 stops in gear, 30-0 mph,
150-200°F IBT, 10 fpsps decel.

Performance Requirements:
Pedal force 10-60 lb., lock-up
=<1 wheel, stay in 12 ft. lane.

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	MAX. PEDAL FORCE (lb)	AVG. PEDAL FORCE (lb)	MAX. DECEL (ft/sec²)	AVG. DECEL (ft/sec²)	AVG MAX PF (lb)
1	30.3	152	172	171	191	56.3	40.9	16.6	10.8	55.5
2	29.9	167	180	178	197	56.2	43.0	19.8	11.1	
3	30.4	176	187	187	198	54.0	39.9	19.2	11.1	

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)		
1	- NOX	SOUTH	YES
2	- NOX	SOUTH	YES
3	- NOX	SOUTH	YES

COMMENTS: NONE

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

Vehicle: 2012 IC CORPORATION NHTSA NUMBER: CC0900
Make: INTERNATIONAL
Model: PB10500
Body Style: SCHOOL BUS
Front Cold Tire Pressure: 100 (psi)
Rear Cold Tire Pressure: 100 (psi)

Transportation Research Center, Inc.
10820 State Route 347
East Liberty, Ohio 43319
(937)666-2011 www.trcpg.com

Date Tested: 05/20/11

DATA SHEET 22A - WATER RECOVERY (RECOVERY)(S7.16)

Testing Conditions: INV DATA, Section 0130, 05/20/11, 14:09:42

Weather Conditions: 75°F Wind: 9 mph 341° Start Odo.: 1921 End Odo.: 1923

Schedule:
Drive for 2 min., at 5mph in any combination of foward and reverse directions in 6 inches of water

GVWR, 5 stops in gear, 30-0 mph, 10 fpsps decel. Stops initiated as soon as 30 mph is reached.

Performance Requirements:
5 stops at 10 fpsps, stops 1-4 pedal force <= 150lb; stop 5 pedal force +45 lb. max. Min. force (5th stop only) baseline -10 lb. or times .6, whichever is lower but >5 lb.
Pedal force range: max110lb min.33 lb.

STOP #	INIT SPD (mph)	MAX PEDAL FORCE (lb)	AVG. PEDAL FORCE (lb)	AVE DECEL (ft/sec^2)	Max Decel (ft/sec^2)
1	30.5	55.0	46.0	10.8	19.4
2	29.9	51.3	41.9	10.1	17.7
3	30.5	47.3	41.3	10.0	15.0
4	30.3	47.9	40.1	9.7	14.1
5	30.2	48.9	41.8	10.1	14.9

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES

COMMENTS: NONE

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: DEREK BEVIS Date: 5/26/11
Approving Laboratory Official: MIKE BILBEE Date: 5/26/11

6.0 Data Sheet No. 1.23 - Test Completion Inspection

Veh.: 2012 IC SB NHTSA No.: CC0900 Date: 5/27/11

TEST COMPLETION INSPECTION (S7.18)

Requirements: No fracture of any components such as brake springs, brake shoe or disc pads facing. All mechanical components shall be intact and functional. Friction facing tearout shall not exceed 10% of the lining on any single frictional element. No visible brake fluid or lubricant on the friction surface of the brake. No leakage at any system reservoir cover, seal, or filler opening.

Friction Material Condition:

Primary/Inner/Primary		Secondary/Outer Secondary	
LF	Normal appearance and color	LF	Normal appearance and color
RF	Normal appearance and color	RF	Normal appearance and color
LR	Normal appearance and color	LR	Normal appearance and color
RR	Normal appearance and color	RR	Normal appearance and color

Drum (or Rotor) Condition:		Brake Fluid/Lubricant Inside Brakes:	
LF	Normal appearance and color	LF	None
RF	Normal appearance and color	RF	None
LR	Normal appearance and color	LR	None
RR	Normal appearance and color	RR	None

Hydraulic Component Condition:		Mechanical Component Condition:	
LF	Normal appearance; no leakage	Brake Pedal:	Good
RF	Normal appearance; no leakage	Power Brake:	Good
LR	Normal appearance; no leakage	Stoplights:	Good
RR	Normal appearance; no leakage	Linkages:	Good

Master Cylinder: Normal appearance; no leakage

Comments: None.

Odometer: 892 mi.

DATA INDICATES COMPLIANCE Yes (X) No ( ) No Requirements ( )

DRIVER Derek Bevis OBSERVER None

RECORDED DATA PROCESSED BY D. Bevis DATE 5/27/11

APPROVING LABORATORY OFFICIAL M. Bilbee DATE 5/27/11

Veh.: 2012 IC SB NHTSA No.: CC0900 Date: 5/27/11

MASTER CYLINDER RESERVOIR

	Reservoir Compartments			P	F
(1)	Does master cylinder have a reservoir compartment for each subsystem?	Yes X No ____	Master cylinder shall have a reservoir compartment for each subsystem.	X	____
(2)	Does loss of fluid in one compartment result in complete loss for another compartment?	Yes ____ No X	Loss of fluid from one compartment shall not cause complete loss from another compartment.	X	____

Reservoir Capacity

Shall conform to requirements (1) or (2), state units. (1) For reservoirs having completely separate compartments for each subsystem.

Subsystem 1

Subsystem reservoir capacity	Not Appl.	Shall have a minimum capacity equivalent to the fluid displacement resulting when all wheel cylinders or caliper pistons serviced by that portion of the reservoir move from a new lining, fully retracted position to a fully worn, properly adjusted, fully applied position.	Not Appl.
Fluid Displaced	Not Appl.		

Subsystem 2

Subsystem reservoir capacity		Same as above	Not Appl.
Fluid displaced	Not Appl.		

Veh.: 2012 IC SB NHTSA No.: CC0900 Date: 5/27/11

(2) For reservoirs utilizing a portion of the reservoir for a common supply to two or more subsystems.

			P	F
Total minimum capacity for the entire master cylinder reservoir.	2077 ml	Shall have total minimum capacity for entire reservoir for displacement resulting from all subsystem wheel cylinders or caliper positions moving from new lining to full worn condition as above.	X	
Fluid displaced	1884 ml*			
Subsystem 1 Minimum volume in partial compartment	42 ml	Shall have minimum reservoir volume in partial compartment equal to at least the volume displaced by the master cylinder piston servicing the subsystem.	X	
Fluid displaced	2.7 ml			
Subsystem 2 Minimum volume in partial compartment	46 ml	Same as above.	X	
Fluid displaced	2.7 ml			

*Reference Data Sheet 1.25 “Calculation of Minimum Reservoir Volume Requirements”.

Veh.: 2012 IC SB NHTSA No.: CC0900 Date: 5/27/11

MASTER CYLINDER PISTON DISPLACEMENT

Reservoir Compartments			P	F
Fluid displaced by three strokes of master cylinder piston.		Individual partial compartments of reservoir shall each		
Primary (Subsystem No. 1)	8 ml	have a minimum of		
Secondary (Subsystem No. 2)	8 ml	fluid equal to at least the volume displaced		
Fluid displaced per stroke.		by the master cylinder		
Primary	2.7 ml	piston servicing the		
Secondary	2.7 ml	subsystem during a full stroke of the piston.		
Fluid available in partial compartment				
Subsystem No. 1	42 ml		X	
Subsystem No. 2	48 ml		X	
Brake Power Unit Reservoir				
Volume displaced in charging system piston or accumulator to normal operating pressure plus wheel cylinder or caliper piston displacement.		Shall have a capacity at least equal to the fluid displacement required to charge the system pistons on accumulators to normal operating pressure plus displacement when wheel cylinders or caliper pistons move from new lining to full worn condition as above.	Not Appl.	

Veh.: 2012 IC SB NHTSA No.: CC0900 Date: 5/27/11

Reservoir Labeling			P	F
Exact copy of reservoir label: WARNING. CLEAN FILLER CAP BEFORE REMOVING. USE ONLY DOT 3 OR DOT 4 FLUID FROM A SEALED CONTAINER.		Label shall read: "Warning, clean filler cap before removing; use only *fluid from a sealed container." *Fluid type specified in 49 CFR 571.116.	X	
Measure letter height : 1/8 in.		Letters shall be at least 1/8 inch high.	X	
Describe label attachment method and location. Primary: Embossed on top of the master cylinder reservoir.		Label shall be permanently affixed, engraved, or embossed and located so as to be visible by direct view either on or within four inches of the brake fluid reservoir filler plug or cap.	X	
Does the lettering contrast with the background?	Yes ____ No ____	If label is not engraved or embossed, letters shall be of a color that contrasts with the background.	Not Appl.	
Service brake systems acting on ALL wheels?	Yes X No ____	Must meet requirement.	X	
Wear of the service brake is Compensated for by means of a system of automatic adjustment?	Yes X No ____	Must meet requirement.	X	
Each vehicle shall have a parking brake system of a friction type a solely mechanical means to retain engagement.	Yes X No ____	Must meet requirement.	X	
Describe location of brake indicator lamp(s): “Upper middle of the instrument cluster.”		Must be in front and clear view of driver.	X	
Vehicles with a GVWR greater than 10,000 lbs. ABS indicator light.		Must be separate indicator light for ABS.	X	

Veh.: 2012 IC SB NHTSA No.: CC0900 Date: 5/27/11

BRAKE SYSTEMS INDICATOR LAMP

			P	F
Does lamp light with ignition (start) switch at ON/RUN?	Yes_X_ No___	Lamps activate when ignition switch is turned to "on"position when the engine is not running, or when the switch is in a position between "on" and start.	X	___
Does lamp light with ignition between ON and Start?	Yes_X_ No___			

Functional Requirement:

Split service brake systems - with ignition on, lamp must light either for conditions (a) and (d) or (b) and (d). If vehicle is so equipped, must also light for (c). DO NOT TEST BULB CHECK.

Non-split systems - same as for split systems plus for (a), must light and sound alarm when supply pressure falls to 50% normal.

Condition:		Performance	P	F
(a) In event of hydraulic leak, must meet 1 of 4 criteria below:				
(1) Pressure differential ≤ 225 psi		Not Appl. psi	Not Appl.	
(2) Non power-assisted brakes, pedal force ≤ 50 lbs.		Not Appl. lb.	" " " "	
(3) Power-assisted brakes, pedal force ≤ 25 lbs.		Not Appl. lb.	" " " "	
(4) Supply pressure to brake power unit	Normal psi	Not Appl. psi	" " " "	
≤ 50% normal pressure	Lamp on @	Not Appl. psi	" " " "	
Lamp on psi/Normal psi x 100		Not Appl. %	" " " "	
(b) If any reservoir falls below safe level or 25% capacity, whichever is greater.	Resvr. full	2077 ml	( ) @ safe lev.	
	Lamp on	592 ml	(X) above level	
(Lamp on cc/Full cc) x 100		@ 29 %	X	___
(c) If a malfunction that effects the generation or transmission of response or control signals in ABS or a total electrical failure of anti-skid or variable proportioning system.	(X) Yes		X	___
	( ) not so eq			
	( ) varbl. propn. Electrical		Not Appl.	
(d) If parking brake applied	(X) Yes		X	___
(e) Warning indicator activated -	(X) Yes ( ) No			
Steady burning or flashing -	(X) Steady ( ) Flashing			

Comments: None.

Veh.: 2012 IC SB NHTSA No.: CC0900 Date: 5/27/11

Labeling Requirement:

(For purposes of this inspection only): Lamps shall be noticeable to the driver in daylight when lighted, shall remain lighted (ignition on) as long as condition exists, and shall be labeled as indicated below.

Condition:		Performance	P	F
(a & b)	Hydraulic failure indicator labeled Brake. Note: "BRAKE" w/two symbols.	(X) BRAKE,	Info. only	
(1)	Noticeable to the driver	(X) Y, ( ) N	X	
(2)	Remain lighted (with leak, turn ign. off & on)	(X) Y, ( ) N	X	
(3)	Lens or lettering shall be red - color of lens, coloring of lettering	Black Red	X	
(4)	Lettering at least 1/8" high (1/4" non-split) (for a & b only)	0.125 in.	X	
(c)	Antilock or electrical proportioning failure ( ) ANTILOCK, "ABS" within symbol	( ) BRAKE,	Info. only	
	(1), (2), (3) may be yellow (X) Y, ( ) N, & (4) OK ( ) not so eq		X	
(d)	Parking brake applied, indicator labeled ( ) PARK BRAKE, (X) PARK, ( ) w/.	( ) BRAKE,	X Info. only	
	(1), (2), (3), (4) OK (X) Y, ( ) N, & (4) OK		X	

	Requirement	P	F
For vehicles with GVWR greater than 10,000 lbs. ABS or variable proportioning malfunction stored after ignition turned "off"?	Must remain activated as long condition exists whenever ignition "on" position whether or not the engine is running. Malfunction must be stored.	X	
Vehicles with GVWR greater than 10,000 lbs., must be equipped with ABS.		X	
Vehicle with GVWR greater than 10,000 lbs. the ABS directly controls the wheels of at least one front axle and the wheels of at least one rear axle.	Must meet condition.	X	

7.0 Data Sheet No. 1.25 Calculation of Minimum Reservoir Volume Requirements

Veh.: 2012 IC SB NHTSA No.: CC0900 Date: 5/27/11

LOCATION	TYPE	DESCRIPTION		MIN. THICKNESS		THICKNESS TO FULLY WORN (1)
Left Front	Drum ( )	Primary	( )	Pre-Test	0.730 in.	0 in.
	Disc (X)	Primary	( )	Post-Test	0.720 in.	
		Inboard	(X)	Δ	0.010 in.	
		Secondary	( )	Pre-Test	0.726 in.	0 in.
		Secondary	( )	Post-Test	0.717 in.	
		Outboard	(X)	Δ	0.009 in.	

Lining Clearance:

Diametral[2] Not Appl. Inboard Approx. 0 in. Outboard Approx. 0 in.

Wheel Cylinder Dia[3] Not Appl. Caliper Piston Dia[3] 2.512 in. (x 4)
Shoe Cage Dia[4] Not Appl. Center Point of Brake Assembly to Center Point of W.C. Not Appl.

Right Rear	Drum ( )	Primary	( )	Pre-Test	0.728 in.	0 in.
	Disc (X)	Leading	( )	Post-Test	0.716 in.	
		Inboard	(X)	Δ	0.012 in.	
		Secondary	( )	Pre-Test	0.718 in.	0 in.
		Trailing	( )	Post-Test	0.700 in.	
		Outboard	(X)	Δ	0.018 in.	

Lining Clearance:

Diametral[2] Not Appl. Inboard Approx. 0 in. Outboard Approx. 0 in.

Wheel Cylinder Dia[3] Not Appl. Caliper Piston Dia[3] 2.511 in. (x 4)

Shoe Cage Dia[4] Not Appl. Center Point of Brake Assembly to Center Point of W.C. Not Appl.

Subsystem 1 consists of: LF ( ) LR (X) RF ( ) RR (X) Operative
Subsystem 2 consists of: LF (X) LR ( ) RF (X) RR ( ) Operative

(1) Manufacturer's Recommendations
Rear - NA

Front – NA

(2) Drum Brakes, Measured At Horizontal Centerline
Manufacturer's Data: Not Appl.

(3) Manufacturer's Data:
Front – NA
Rear – NA

(4) Reset Position

Metal Lining Foundation Thickness
Front - NA
Rear - NA

Note: Manufacturer's new lining thickness specifications:
Fronts – NA
Rears – NA

No manufacturer's specifications were available.
Thickness to Fully Worn (Linings) was not available.
Therefore, defaulted to a zero measurement.

Procedure and Calculations for Determining Master Cylinder Volume Requirement

The procedure followed for determining the minimum volume requirements is outlined in the example shown below. The required data is taken from the previous page. Both measured and manufacturer's provided data utilized to obtain the greatest amount of fluid volume.

Disc Brake: $V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times \frac{\pi d^2}{4}$

Where:
V_r = Volume required per wheel
Δt = Change in thickness (average)
i = Inboard
o = Outboard
d = Caliper cylinder diameter
C = Average radial drum-to-lining clearance

Front
Disc Brake: $V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times \frac{\pi d^2}{4}$

Δt_i = 0.730 in.

Δt_o = 0.726 in.

$t_{ic} + t_{oc}$ = 0 in.

d = 2.512 in.

$V_r = (0.730 + 0 + 0.726 + 0) \frac{\pi (2.512)^2}{4}$

= 1.456 (4.953)

= 7.21 $in.^3$ = 118.2 ml, x 4 Pistons per Caliper = 472.8 ml

Rear
Disc Brake: $V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times \frac{\pi d^2}{4}$

Δt_i = 0.728 in.

Δt_o = 0.718 in.

$t_{ic} + t_{oc}$ = 0 in.

d = 2.511 in.

$V_r = (0.728 + 0 + 0.718 + 0) \frac{\pi (2.511)^2}{4}$

= 1.446 (4.950)

= 7.158 $in.^3$ = 117.3 ml, x 4 Pistons per Caliper = 469.2 ml

Total Volume required 2(472.8) + 2(469.2) = 1884 ml*

APPENDIX A

Instrumentation
Pre- & Post-Test Calibrations
Daily Calibrations

7.0 INSTRUMENT CALIBRATION (12 MONTH MAXIMUM INTERVAL)

VEHICLE: 2012 IC SB; NHTSA NO.: CC0900; DATE: 5/27/11

INSTRUMENT	SERIAL NUMBER	CALIBRATION DATE	NEXT CALIBRATION
Data Acquisition System - Link DAS 2060	2101	8/23/10	8/23/11
Computer – Dell/Link Engrg.	TRC-43366	Not Applicable	Not Applicable
Software - Link Engrg. Rev Data	TRC Propr.	NA	NA
LF Torque Wheel	Not Utilized		
RF Torque Wheel	Not Utilized		
LR Torque Wheel	Not Utilized		
RR Torque Wheel	Not Utilized		
Stopwatch – Fisher Scientific (Fade Snubs)	SW 97216633	8/3/10	08/3/11
Stopwatch – Radio Shack 63-5014 (Daily Cals)	SW ST04	9/16/10	9/16/11
Tire Pressure Gauge – McDaniel Contrl.	AG-019	1/12/11 & 3/29/11	6/27/11
Pedal Force Transducer – GSE	LC-9418	Each Test	Each Test
Asst. Pipe-Handle Steel Weights - Ohaus	LB-0001	5/18/10 & 5/19/11	5/19/12
Park Brake Force Transducer – Imada Digital Force Gage DP5-220	OE-173727	6/30/10	6/30/11
LF Hydraulic Pressure Transducer	Not Utilized		
RF Hydraulic Pressure Transducer	Not Utilized		
LR Hydraulic Pressure Transducer	Not Utilized		
RR Hydraulic Pressure Transducer	Not Utilized		
Accelerometer - Setra (+ or – 15 g) 141A	A-167627	Each Test	Each Test
Fifth Wheel – ADAT DSR-06 Radar	1400082	Each Test	Each Test
Wind Velocity/Direct. – Davis Model 6410	070321N03	5/19/10	5/20/11
Ambient Temp. Gage–Davis Mod. 6152	070321N01	5/19/10	5/20/11
LF Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
RF Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
LR Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
RR Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
Lock-up Detection System	TRC Propr.	Each Test	Each Test
Vehicle Weight – Toledo/Mettler Scales JXGA 3000, (Bldg. 50)	SN 5318823-5KD	2/14/11 & 5/14/11	8/14/11

QUALITY ASSURANCE_____

PRE- TEST, POST-TEST AND DAILY CALIBRATIONS

DAILY CALIBRATIONS (1 of 3)

Vehicle: 2012 IC SB NHTSA No.: CC0900

Deceleration Calibration Data
Desired full scale value is: 32.2 ft/s/s
Allowed deviation is: + or - 0.5 ft/s/s

		"Date"	"Time"	Zero	Cal	
		"stp"	"stp"	"Decel"	"Decel"	
Accelerometer	Level to zero, then tilt to full scale	4/6/2011	7:20:08	0.0	32.3	PRE TEST CAL.
		4/7/2011	8:55:10	0.1	32.1	
		4/13/2011	10:46:02	0.0	32.3	
		4/21/2011	7:11:31	0.0	32.1	
		4/22/2011	9:17:02	0.0	32.1	
		4/26/2011	9:21:32	0.0	32.3	
		4/29/2011	10:23:01	0.0	32.1	
		4/29/2011	13:10:13	0.1	32.2	
		5/5/2011	7:43:12	0.0	32.2	
		5/6/2011	7:20:46	0.0	32.2	
		5/9/2011	8:43:57	0.0	32.2	
		5/13/2011	7:29:35	0.1	32.3	
		5/13/2011	10:04:54	0.1	32.2	
		5/19/2011	7:23:55	0.0	32.1	
		5/20/2011	7:09:46	0.1	32.2	
		5/20/2011	14:18:32	0.0	32.2	
		5/23/2011	8:27:03	0.0	32.2	POST TEST CAL.

Pre-Test Linearity Check 3/7/11

Actual (ft/s/s)	Rec. (ft/s/s)
0.0	0.0
10.0	10.0
20.0	20.0
25.0	25.0
32.2	32.2

Post-Test Linearity Check 5/23/11

Actual (ft/s/s)	Rec. (ft/s/s)
0.0	0.0
10.0	10.0
20.0	20.0
25.0	25.0
32.2	32.2

Distance Calibration Data
Desired full scale value is: 1000 ft
Allowed deviation is: 10 ft

		"Date"	"Time"	Distance for	
		"stp"	"stp"	1000 meters	
Light beam distance sensor	Drive from 0 to 20 to 0 mi/h on a measured distance.	3/17/2011	9:56:58	1001.2	PRE TEST CAL. 1000
		3/17/2011	9:59:26	498.4	PRE TEST CAL. 500
		3/17/2011	10:03:04	248.7	PRE TEST CAL. 250
		3/17/2011	10:04:14	99.4	PRE TEST CAL. 100
		4/6/2011	7:34:37	999.0	
		4/13/2011	12:10:26	997.8	
		4/21/2011	7:12:18	998.5	
		4/26/2011	9:22:04	998.6	
		4/29/2011	10:23:38	997.7	
		4/29/2011	13:13:14	999.5	
		5/6/2011	7:21:29	1001.0	
		5/9/2011	8:45:39	1002.1	
		5/13/2011	7:30:09	1001.3	
		5/13/2011	10:06:39	1000.4	
		5/19/2011	7:25:04	1002.2	
		5/20/2011	7:11:11	1003.8	
		5/20/2011	14:19:13	1000.1	POST TEST CAL. 1000
		5/20/2011	14:21:22	498.0	POST TEST CAL. 500
		5/20/2011	14:22:19	249.3	POST TEST CAL. 250
		5/20/2011	14:24:06	99.2	POST TEST CAL. 100

DAILY CALIBRATIONS CONTINUED (2 of 3)

Vehicle: 2012 IC SB NHTSA No.: CC0900

Wheel Tachometer Calibrations

Wheel tachometer calibrations: all wheel speeds should be 10 mi/h

		"Date"	"Time"	Zero	@20mi/h	Zero	@20mi/h	Zero	@20mi/h	Zero	@20mi/h	
		stp	stp	LF	LF	RF	RF	LR	LR	RR	RR	
Wheel lock detector	While at a standstill, check zeros. Drive vehicle at approx. 20 mi/h and engage zero speed switch for each wheel	3/17/2011	10:09:37	-1	10	0	11	0	11	0	11	PRE TEST CAL.
		4/6/2011	7:41:50	-1	12	0	11	0	11	0	11	
		4/26/2011	9:23:48	0	12	0	11	0	11	0	11	
		4/29/2011	10:25:18	0	14	0	11	0	10	0	11	
		4/29/2011	13:15:17	0	13	0	11	0	11	0	11	
		5/5/2011	7:42:16	-1	13	0	11	0	11	0	11	
		5/6/2011	7:23:00	0	11	0	11	0	10	0	11	
		5/9/2011	8:47:11	0	11	-1	11	0	12	0	11	
		5/13/2011	7:31:43	-1	11	0	11	0	12	0	11	
		5/13/2011	10:05:36	0	12	0	12	0	12	0	12	
		5/19/2011	7:26:34	0	12	0	11	0	12	0	12	
		5/20/2011	7:12:33	0	12	0	11	0	12	0	12	
		5/20/2011	14:24:57	0	11	0	11	-1	12	0	11	POST TEST CAL.

Pedal Force Meter Calibration

Target shunt calibration is 375 lb.

Pre/Post Cal check at a 200 lb. tansducer load.

Allowed deviation is: 1.5 lb.

		"Date"	"Time"	Zero	Cal Val	
		stp	stp	Force	Force lb	
Service brk. pedal effort	Driver engages a fixed shunt cal switch.	3/8/2011	8:12:48	-0.5	375.2	PRE TEST CAL.
		4/6/2011	7:33:50	-1.7	375.9	
		4/7/2011	8:55:50	-0.7	374.8	
		4/13/2011	10:50:43	-1.2	374.8	
		4/21/2011	7:10:27	-0.2	375.6	
		4/22/2011	9:15:57	-1.9	375.2	
		4/26/2011	9:20:44	-0.3	375.3	
		4/29/2011	10:21:48	-1.5	375.0	
		4/29/2011	13:09:33	-0.4	375.3	
		5/5/2011	7:21:29	-1.2	374.5	
		5/6/2011	7:20:05	-0.4	375.1	
		5/9/2011	8:45:00	-0.4	375.4	
		5/13/2011	7:28:44	-0.2	375.5	
		5/13/2011	10:04:08	-0.6	375.6	
		5/19/2011	7:23:02	-0.7	375.3	
		5/20/2011	7:08:32	-0.4	375.1	
		5/20/2011	14:17:45	-0.6	374.8	
		5/23/2011	8:25:00	-1.6	375.9	POST TEST CAL.

Pre-Test Linearity Check - 3/7/11

Actual Force (lb.)	Recorded Force (lb.)
0.0	0.0
26.0	26.0
51.0	51.0
76.0	76.0
100.0	100.0
125.0	125.0
150.0	150.0
175.0	175.0
200.0	200.0

Post-Test Linearity Check - 5/23/11

Actual Force (lb)	Recrdd Frc(lb)
0.0	0.1
25.0	25.0
51.0	51.0
76.0	76.0
101.0	101.0
126.0	126.0
151.0	151.0
176.0	176.0
201.0	201.0

DAILY CALIBRATIONS CONTINUED (3 of 3)

Vehicle: 2012 IC SB NHTSA No.: CC0900

Dynamic Speed Calibration

Desired speed value is: 60 mi/h
Allowed deviation is: 1.0 mi/h
Desired time value is: 60 seconds
Allowed deviation is: + or - 1.0 seconds

		"Date"	"Time"	"Speed"	Time"	
		stp	stp	km/h	sec	
Light beam speed sensor	Drive vehicle at a steady 60 mi/h through a mile.	3/17/2011	10:11:13	60.9	59.8	PRE TEST CAL. 30
		3/17/2011	10:13:53	30.6	119.5	PRE TEST CAL. 60
		4/6/2011	7:39:03	60.0	60.5	
		4/13/2011	12:13:18	60.1	60.4	
		4/21/2011	7:17:20	60.1	60.1	
		4/26/2011	9:25:39	60.2	60.4	
		4/29/2011	10:28:43	60.1	60.4	
		5/6/2011	7:24:56	60.4	60.1	
		5/9/2011	8:49:20	60.6	60.4	
		5/19/2011	7:28:30	60.6	60.3	
		5/20/2011	7:14:22	60.5	60.4	
		5/20/2011	14:27:33	60.5	60.4	POST TEST CAL. 60
		5/20/2011	14:29:50	30.1	119.8	POST TEST CAL. 30

APPENDIX B

Photographs

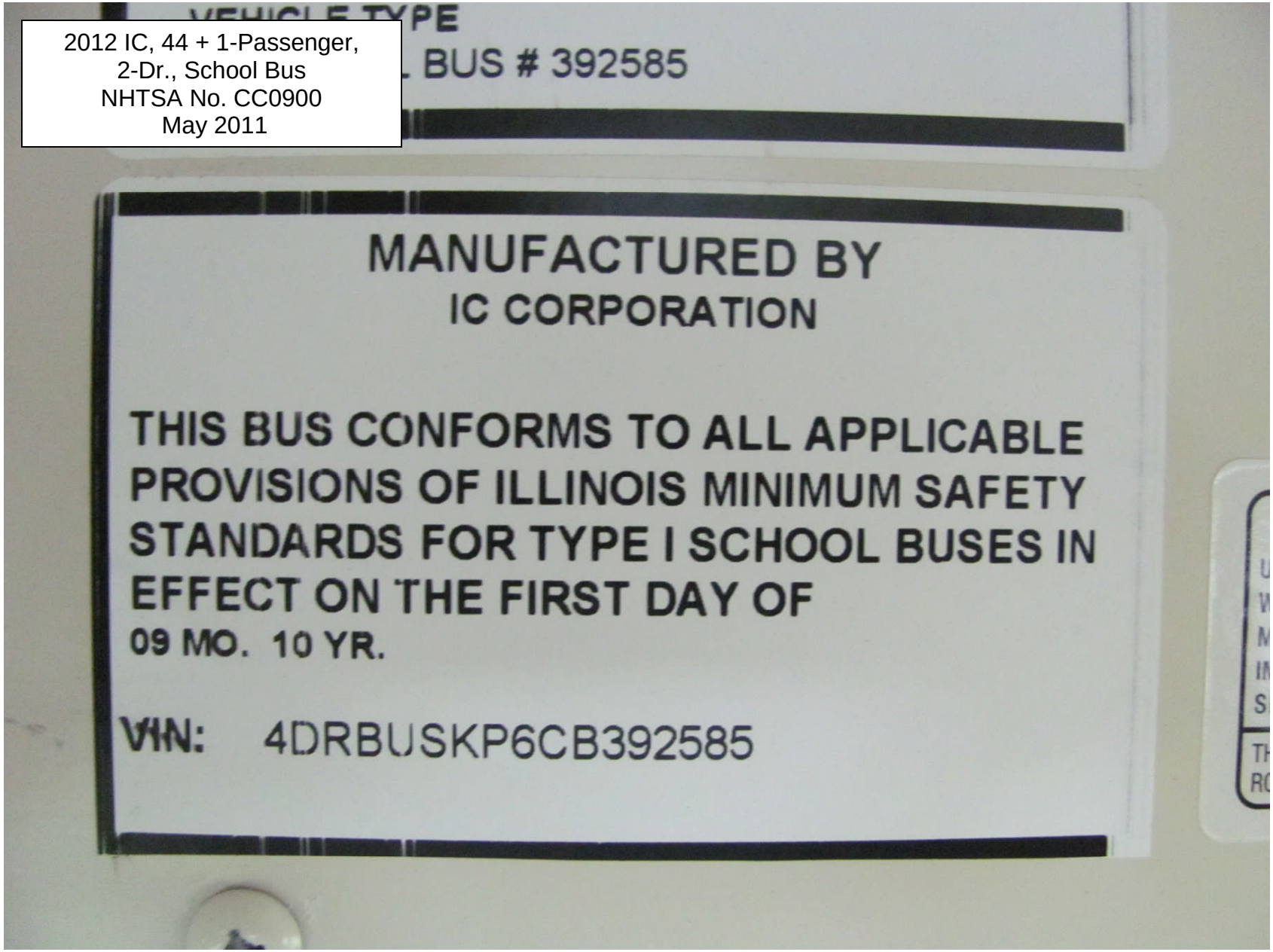
2012 IC, 44 + 1-Passenger,
2-Dr., School Bus
NHTSA No. CC0900
May 2011

Left Front 3/4 View

2012 IC, 44 + 1-Passenger,
2-Dr., School Bus
NHTSA No. CC0900
May 2011

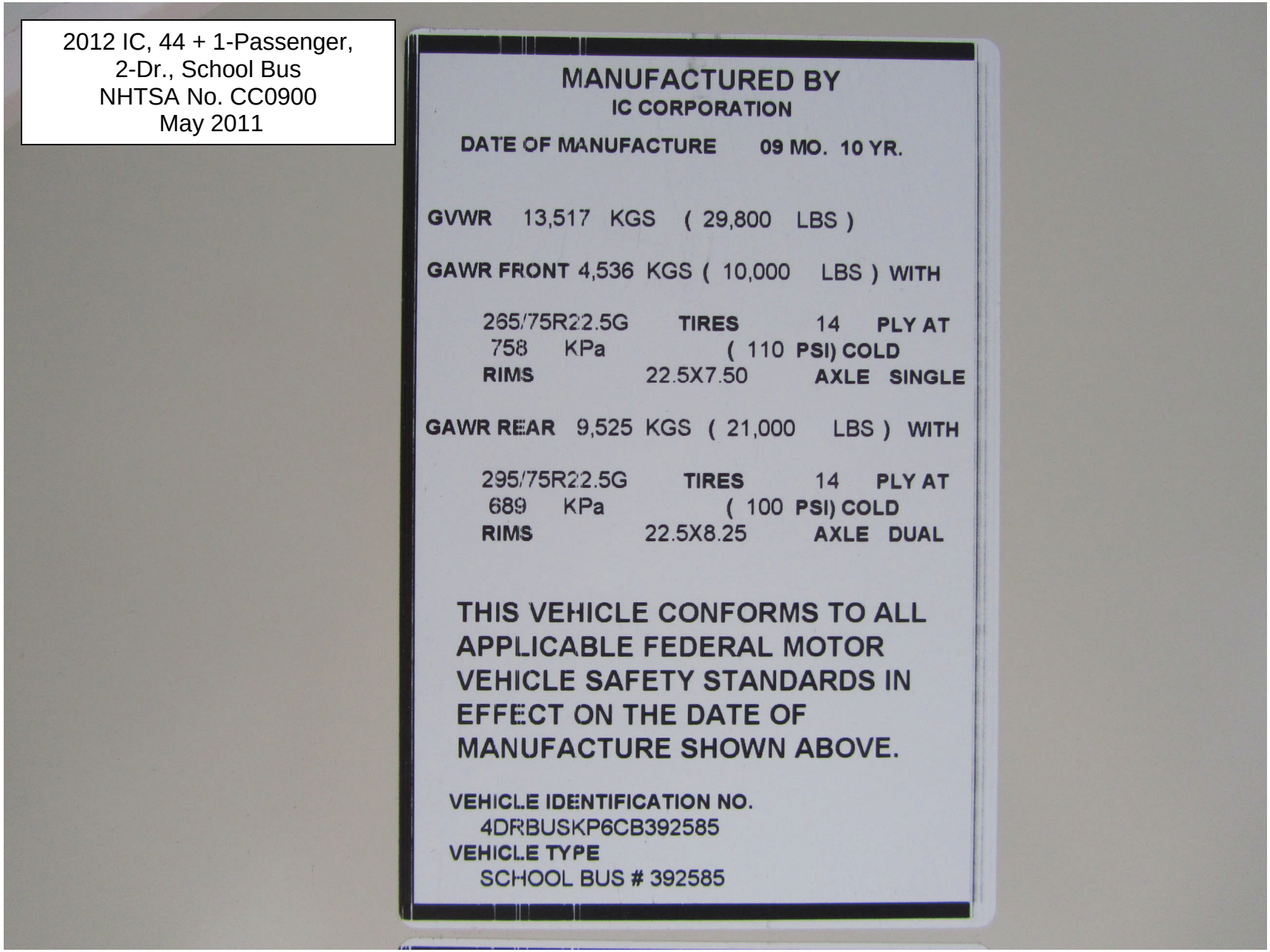
Right Rear 3/4 View

2012 IC, 44 + 1-Passenger,
2-Dr., School Bus
NHTSA No. CC0900
May 2011



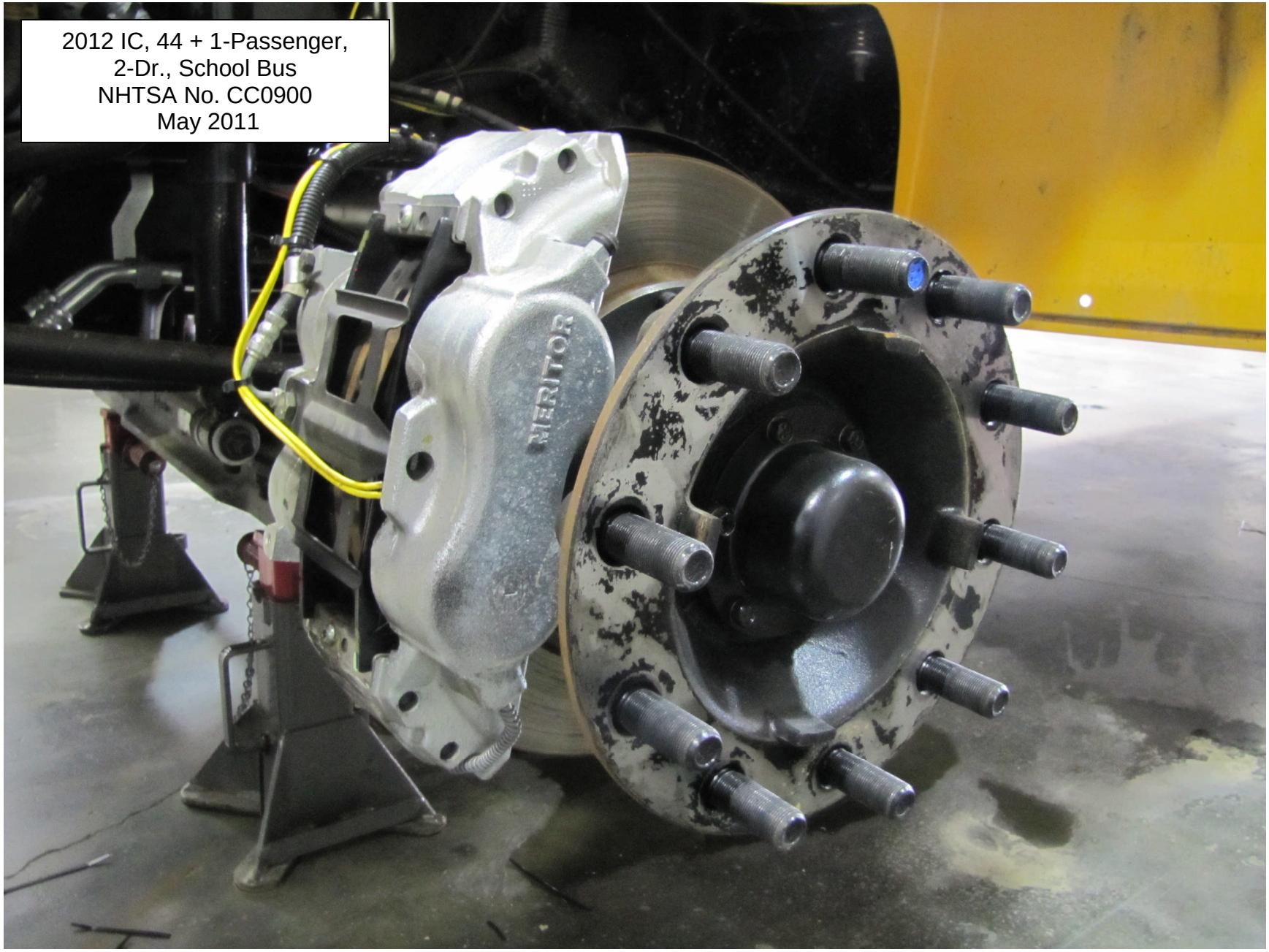
Certification Label

2012 IC, 44 + 1-Passenger,
2-Dr., School Bus
NHTSA No. CC0900
May 2011

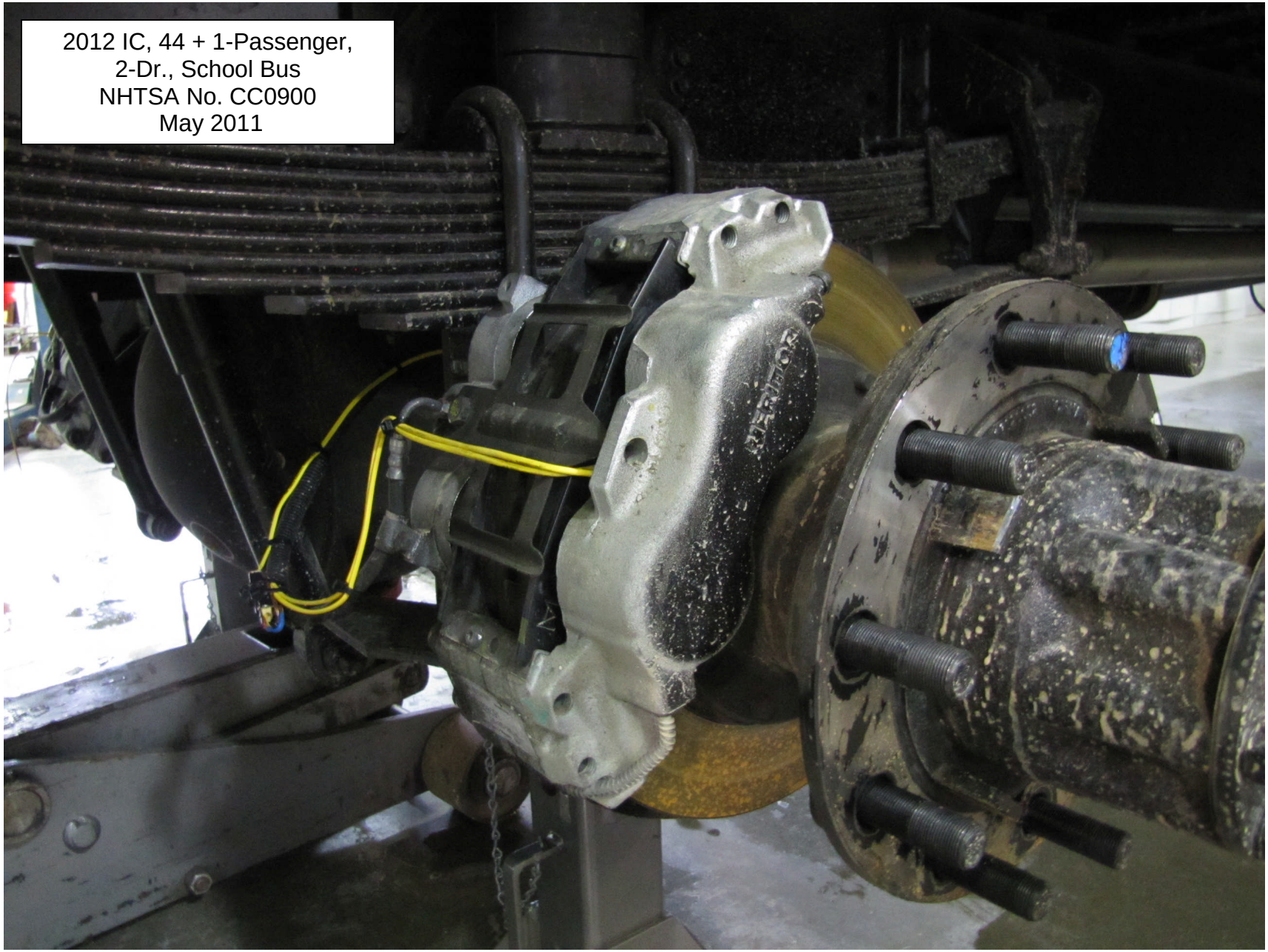


Tire and Certification Label

2012 IC, 44 + 1-Passenger,
2-Dr., School Bus
NHTSA No. CC0900
May 2011



Left Front Thermocouple Installation

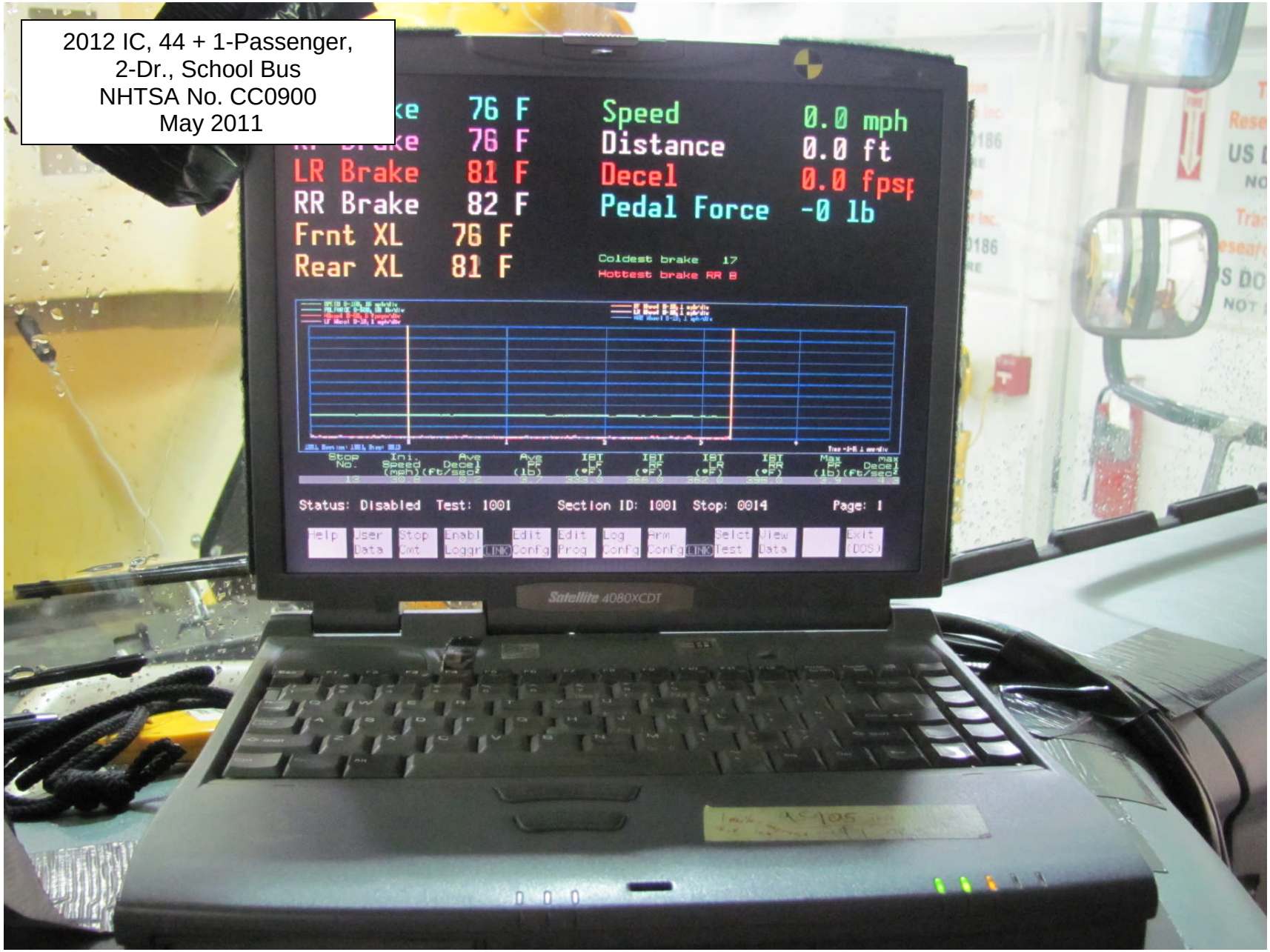


Right Rear Thermocouple Installation

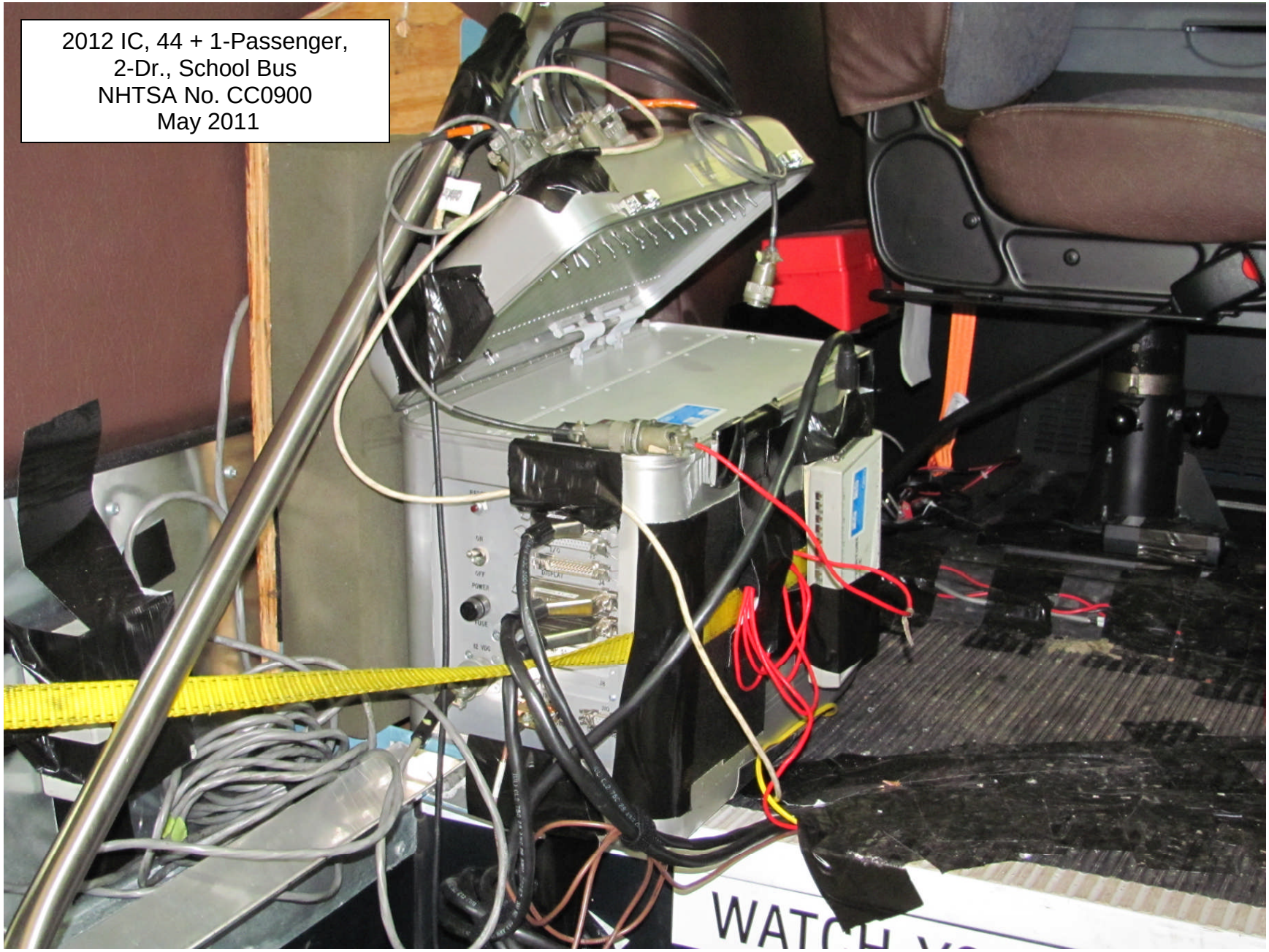
2012 IC, 44 + 1-Passenger,
2-Dr., School Bus
NHTSA No. CC0900
May 2011

Instrumentation in Vehicle

2012 IC, 44 + 1-Passenger,
2-Dr., School Bus
NHTSA No. CC0900
May 2011



Instrumentation in Vehicle



Instrumentation in Vehicle

Instrumentation in Vehicle

2012 IC, 44 + 1-Passenger,
2-Dr., School Bus
NHTSA No. CC0900
May 2011

Vehicle Being Weighed

Ballast in Vehicle

Ballast in Vehicle

Ballast in Vehicle

Ballast in Vehicle

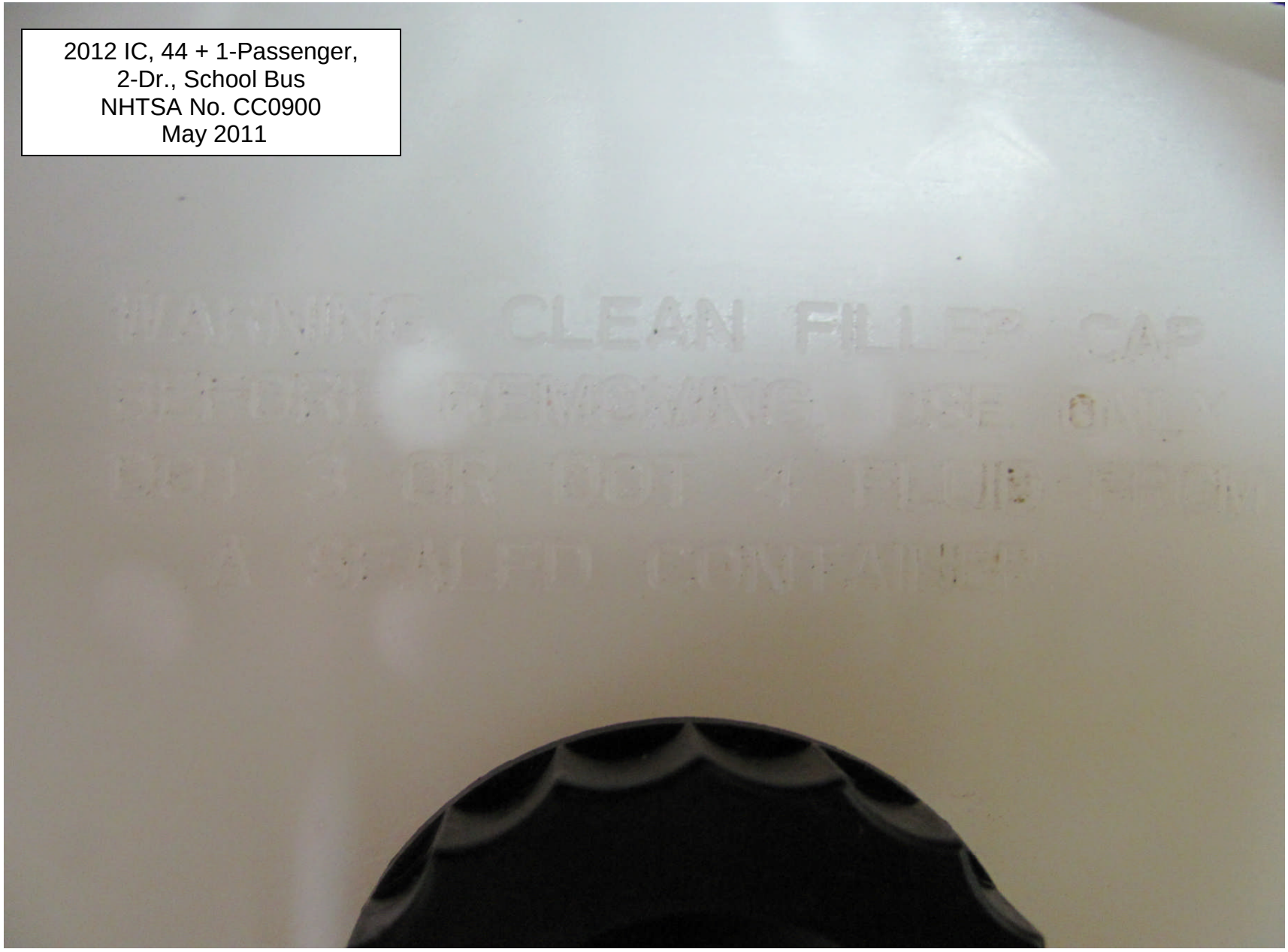
2012 IC, 44 + 1-Passenger,
2-Dr., School Bus
NHTSA No. CC0900
May 2011

Brake System Indicator Warning Lamp

2012 IC, 44 + 1-Passenger,
2-Dr., School Bus
NHTSA No. CC0900
May 2011

ABS Indicator Warning Lamp

2012 IC, 44 + 1-Passenger,
2-Dr., School Bus
NHTSA No. CC0900
May 2011



Brake Fluid (Master Cylinder) Reservoir Warning Label

APPENDIX C

Copy of Manufacturer's Sticker

For this vehicle (CC0900) a manufacturer’s Moroney label (window sticker) was not available.

APPENDIX D

Discussion on Data

DISCUSSION ON DATA

Any discrepancies in brake temperature from visual to recorded data are probably due to the fact that the visual temperatures were taken prior to accelerating to speed, and the recorder was not turned on until just before starting the stop.

Symbols for Brake Components

4	-	4 Wheel	G	-	Groan	DL	-	Deceleration (State FPSPS)
X	-	Skid	SQ	-	Squeal	PF	-	Pedal on Floor
L	-	Left	SQK	-	Squeak	SCP	-	Shoe Scrape
R	-	Right	PO	-	Pinchout	RB	-	Rubber Banding
R	-	Rear	P	-	Pull	O	-	Odor
F	-	Front	R	-	Shudder	NOX	-	No Skid
B	-	Both	M	-	Momentary			

INT or INIT	-	Initial Part of Stop
MID	-	Middle of Stop
END	-	End of Stop

All stops were performed manually.

APPENDIX E

Contractor's Comments
Procedure Modifications
and
Test Facility

Comments for vehicle CC0900.

For all recorded decelerations:

The recorded average deceleration values for the tests are slightly lower than that which is required or targeted for certain test sections. However, in all cases and in reality, the driver maintained the correct required/target deceleration values for the majority of time for each of those stops. The recorded deceleration is acquired from the moment the service brake pedal is moved until the vehicle reaches zero speed. Therefore, the time needed to achieve the target deceleration (rise time) and the time the vehicle goes from the target deceleration to zero (fall time) is included in the average deceleration calculation. The rise and fall times were added to the entire length of the stops. Hence the recorded average deceleration values were always less than the required/target deceleration values.

7.5-MILE TEST TRACK

The 7.5-mile test track encloses a 1,600 acre area, one mile wide and 3.5 miles long.

The track has a downward grade, north to south, of 0.228 percent and a cross slope in the straight-aways of 3/16 inch per foot. The 1.88 mile long straight-aways flow into transition areas 2,300 feet in length and then into 5,275 foot long curves with a constant radius of 2,400 feet. The 36-foot wide straight-aways and the 42-foot wide curves provide three test lanes. Paved berms, 16 feet in width, border the straight-aways and the inside of the curves.

As a vehicle moves toward the outside of the track in the curves, it encounters a progressively steeper bank. The inside lane (or "slow" lane) has a bank of 10 degrees allowing a neutral speed of 80 mph with no side forces. In the center lane, the slope increases to 19 degrees resulting in a neutral speed of 110 mph. The outside lane's 28-degree bank allows a 140 mph neutral speed. Rimming the outer lane is a seven-foot safety lane culminating in a 36-degree slope at the guardrail.

The facility is paved with Portland cement concrete. It carries a maximum single axle load of 36,000 pounds and a maximum tandem axle load weight of 48,000 pounds. Special provisions can be made for heavier weight loads.

With 22.5 lane miles, our track will accommodate many vehicles simultaneously. Research which utilizes the track includes component performance and durability studies, brake tests, aerodynamic studies, fuel economy studies, drive line efficiency tests, and the determination of vehicular acceleration and cruise characteristics. In addition, it supports maximum speed determination, road load power, noise and emission measurements and tire durability test programs.

The 7.5- mile test track can be used in conjunction with other facilities at TRC. It provides an excellent area for pre-test conditioning of equipment such as brake burnishing, tire break-in, and vehicle warm-up.

TRC SKID PAD

The Skid Pad is a test facility which is utilized primarily for the evaluation of tire and brake systems.

The overall dimensions of the pad are 9,000 feet by 84 feet with loops on the north and south ends. Both turnaround loops have a 309-foot radius and are 16 feet wide with a 25 percent super elevation. They will accommodate speeds of 45 mph with zero side force and 60 mph with .5 g's lateral acceleration. The acceleration/deceleration lanes at each end are 3,280 feet in length.

A test area of 210,000 square feet is situated in the center of the skid pad containing several test pads with varying surface textures. Skid numbers in this area range from 30 (wet) to 80 (dry).

The skid pad is paved with Portland cement. The load capacity of the skid pad is 36,000 pounds maximum single axle weight and 48,000 pounds maximum tandem axle weight.

Varying surface textures in the main test area are ideal for testing tire and/or brake system performance on different surfaces as characterized by "skid numbers." The skid pad is also used for acceleration studies, aerodynamics, rolling resistance, noise testing, and vehicle top-speed determination.

APPENDIX F

Notice of Possible Non-Compliance

This vehicle (CC0900) appears to comply with the standard.